

# PURCHASING

AUGUST, 1947

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DETROIT

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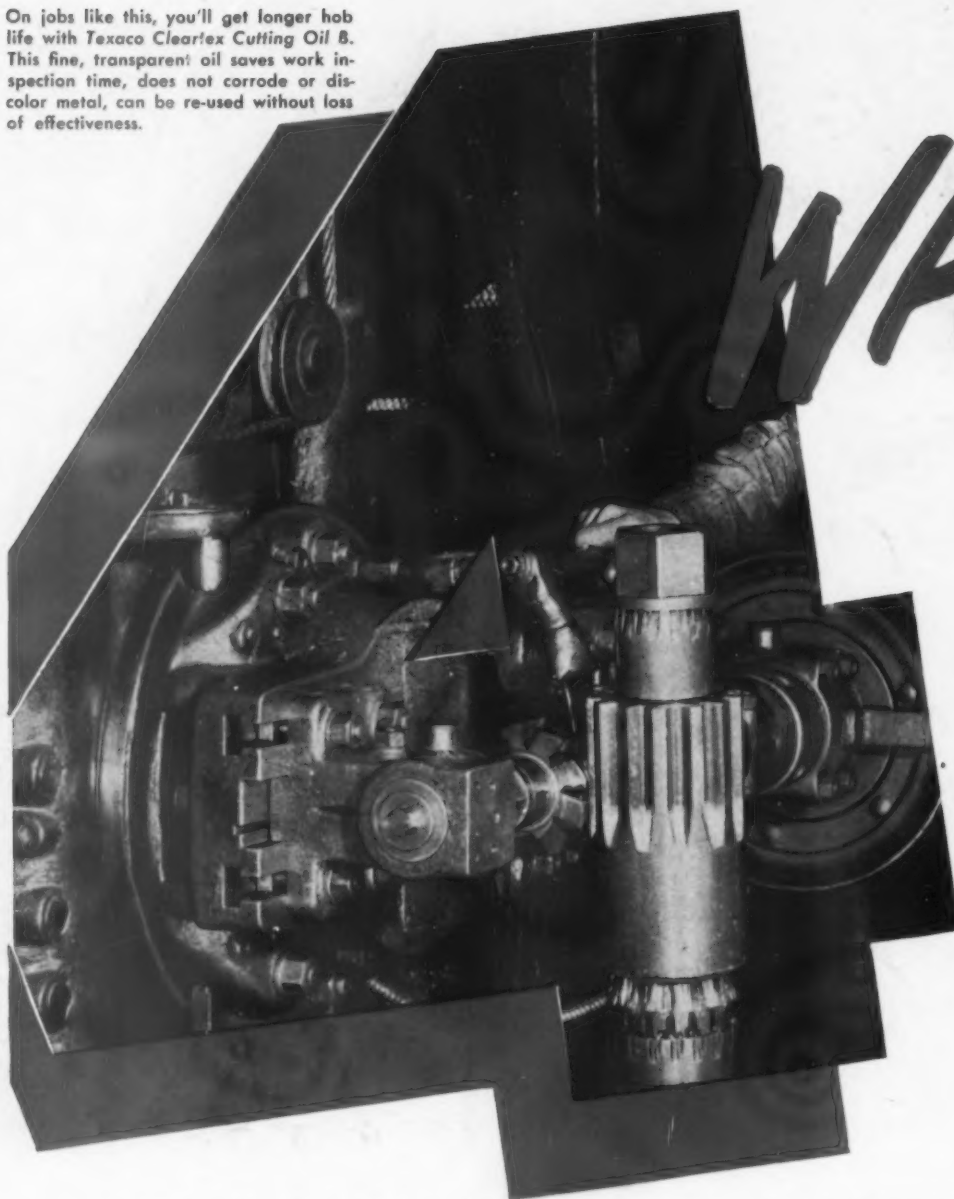
A. G. CLARK:  
CENTRALIZED PURCHASING  
SERVES THE PUBLIC  
See Page 89

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On jobs like this, you'll get longer hob life with *Texaco Cleartex Cutting Oil 8*. This fine, transparent oil saves work inspection time, does not corrode or discolor metal, can be re-used without loss of effectiveness.



# WAYS TO SAVE ON EVERY CUTTING JOB

**I**N *Texaco Cutting, Soluble and Grinding Oils* you have a complete line of cutting coolants to assure better, faster machining of all metals — at appreciable savings.

- ➡ **1. SAVE ON PRODUCTION COSTS.** Texaco cutting coolants both lubricate and cool, prevent chip welding or wheel loading — thus permit higher speeds and feeds for increased production, lower unit costs.
- ➡ **2. SAVE ON REJECT COSTS.** Cleaner cuts assured by Texaco cutting coolants mean greater accuracy, better finish, fewer rejects.

➡ **3. SAVE ON FINISHING OPERATIONS.** Better finish on the original cut frequently eliminates one or more additional operations.

➡ **4. SAVE ON TOOL COSTS.** Texaco cutting coolants keep tools sharp longer, assure more cuts per tool grind, less downtime for tool changes, less tool replacement cost.

Let Texaco Lubrication Engineering Service help you improve your machining and reduce your costs. Just call the nearest of the more than 2500 Texaco distributing plants in the 48 States, or write The Texas Company, 135 East 42nd Street, New York 17, N. Y.



## TEXACO CUTTING, SOLUBLE AND GRINDING OILS FOR FASTER MACHINING

Tune in . . . TEXACO STAR THEATRE presents the NEW TONY MARTIN SHOW every Sunday night. See newspaper for time and station.

**WHEN PARTS MUST BE  
ACCURATE — CENTURY  
RIGIDLY CONSTRUCTED  
MOTORS HELP TO KEEP  
PRODUCTION GOING . .**

25 horsepower  
Century Squirrel  
Cage motor operates  
a turret lathe  
producing accurate  
machine parts.

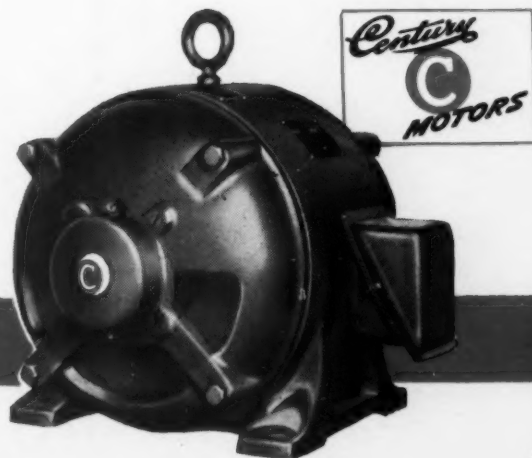


Century motors produce the smooth power needed for highest precision work — they are built with accurate mechanical and electrical balance, permanent alignment, accurately machined mounting feet. And, all parts are housed in a rugged frame that holds all parts rigidly in place, so that top performance is assured throughout a long motor life — even under the toughest operating conditions.

Century builds a complete line of electric motors and generators, fractional and in-

tegral horsepower, in the popular sizes to meet the requirements of industrial production, processing, commercial and home needs.

Specify Century motors for all your electric motor power requirements.



**CENTURY ELECTRIC COMPANY**

1806 Pine Street • St. Louis 3, Missouri  
Offices and Stock Points in Principal Cities

514

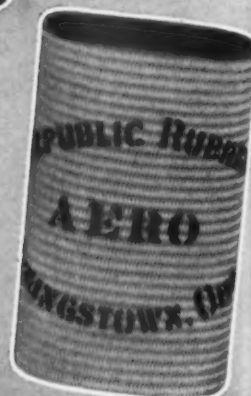


**REPUBLIC  
RUBBER HOSE  
MORE THAN JUST  
TOUGH!**

Acid Hose  
•  
Creamery Hose  
•  
Fire and Chemical Hose  
•  
Gasoline Hose  
•  
Pneumatic Hose  
•  
Sand Blast Hose  
•  
Steam Hose  
•  
Suction Hose  
•  
Water Hose  
•  
Welding Hose

**HOSE** takes a lot of punishment... from high pressures, suction, chemically active fluids or other deteriorating factors of its many uses... from dragging, crushing, exposure to the elements, and other abuse common to hose service. Obviously, most hose has to be a tough combination of rubber compounds and reinforcing components. Republic technologists have done a thorough job of analyzing and breaking down general operating conditions into specific forms of stress and abuse which the rubber and reinforcing body must withstand. They have designed hose for each application, with properties that offer maximum resistance to those particular forms of service abuse. The important thing to you: Republic Hose is more than just tough... it has the right kind of endurance for each hose assignment. Order from your Republic Distributor.

**MORE SERVICE  
FROM RUBBER  
FOR INDUSTRY**



**REPUBLIC RUBBER**

DIVISION

**LEE RUBBER & TIRE CORPORATION**

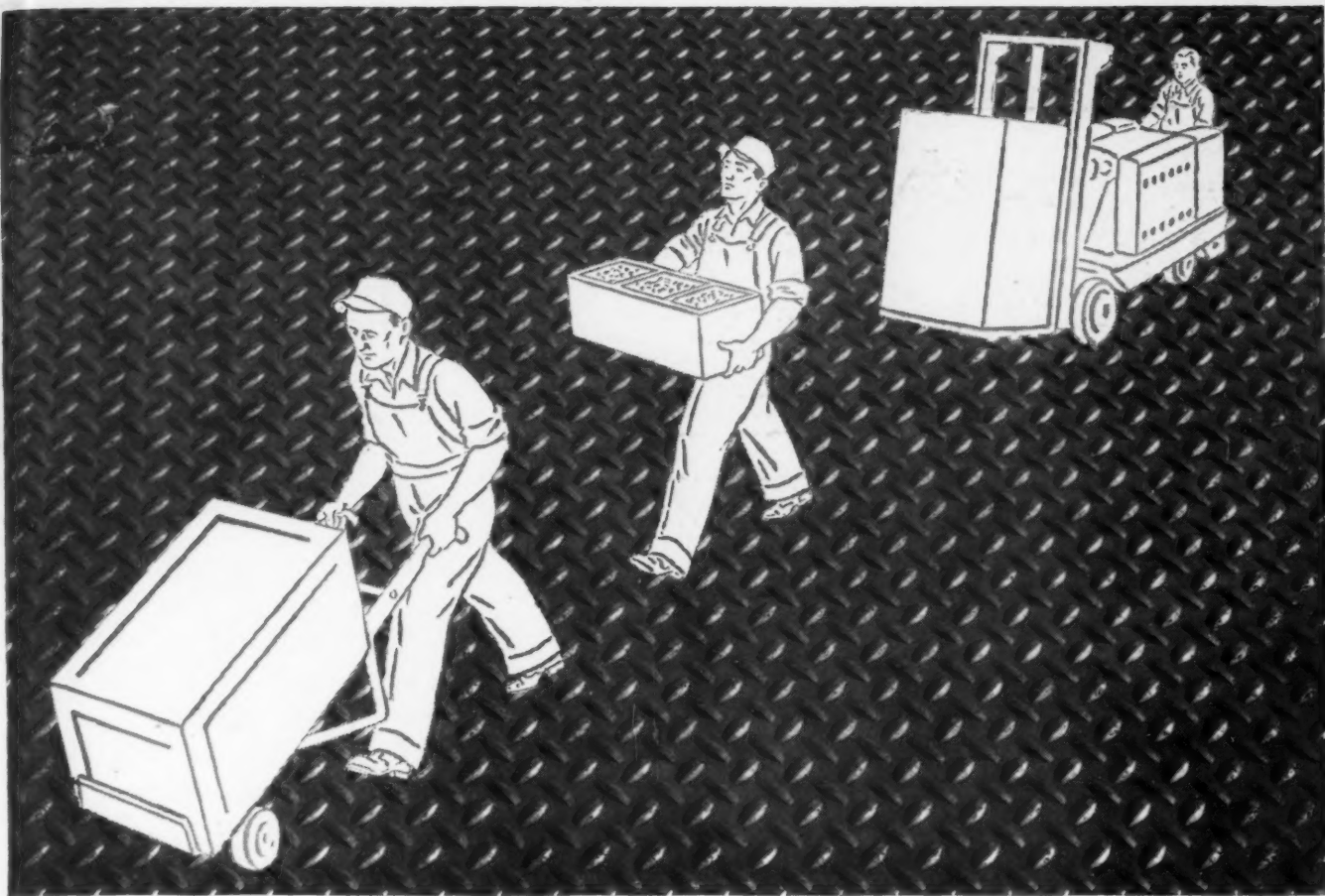
YOUNGSTOWN 1, OHIO

REPUBLIC INDUSTRIAL PRODUCTS  
YOUNGSTOWN, O.



LEE DELUXE TIRES AND TUBES  
CONSHOHOCKEN, PA.





# SURE FOOTING

Here is a super-tough steel flooring . . . made for heavy loads and hard service . . . designed to provide positive traction for men and truck wheels. Even when wet, the angular projections of Inland 4-Way Floor Plate resist slipping or skidding. Men and trucks start faster, move faster, and stop quicker. Accidents and loss of time are sharply reduced. Investigate the advantages of this safer steel flooring.



## for Men and Machines with INLAND 4-Way Floor Plate

### 4-WAY TRACTION

The projections center one another at right angles. No matter at what angle a foot or wheel contacts the plate, it meets a projection edge that grips forward, backward, left or right. Thus slipping is averted.

### 4-WAY CLEANING

Liquids drain off freely, permitting washing and drainage in any direction. This helps to keep water from collecting or ice from forming in exposed locations. There are no dirt-catching pockets or corners, and it is easy to sweep and keep clean.

*Inland 4-Way Floor Plate is Stocked by Leading Warehouses*

### 4-WAY MATCHING

The pattern is the same in all four directions. You can match plates side to side, end to end, or end to side, and provide a continuous pattern over any area. Even small pieces can be matched in and used.

### 4-WAY STIFFNESS

Inland 4-Way Floor Plate is equally rigid lengthwise and crosswise, because the projections overlap one another to reinforce the plate. Ideal for catwalks, stair treads, hatchways, and other applications where stiffness is a factor.

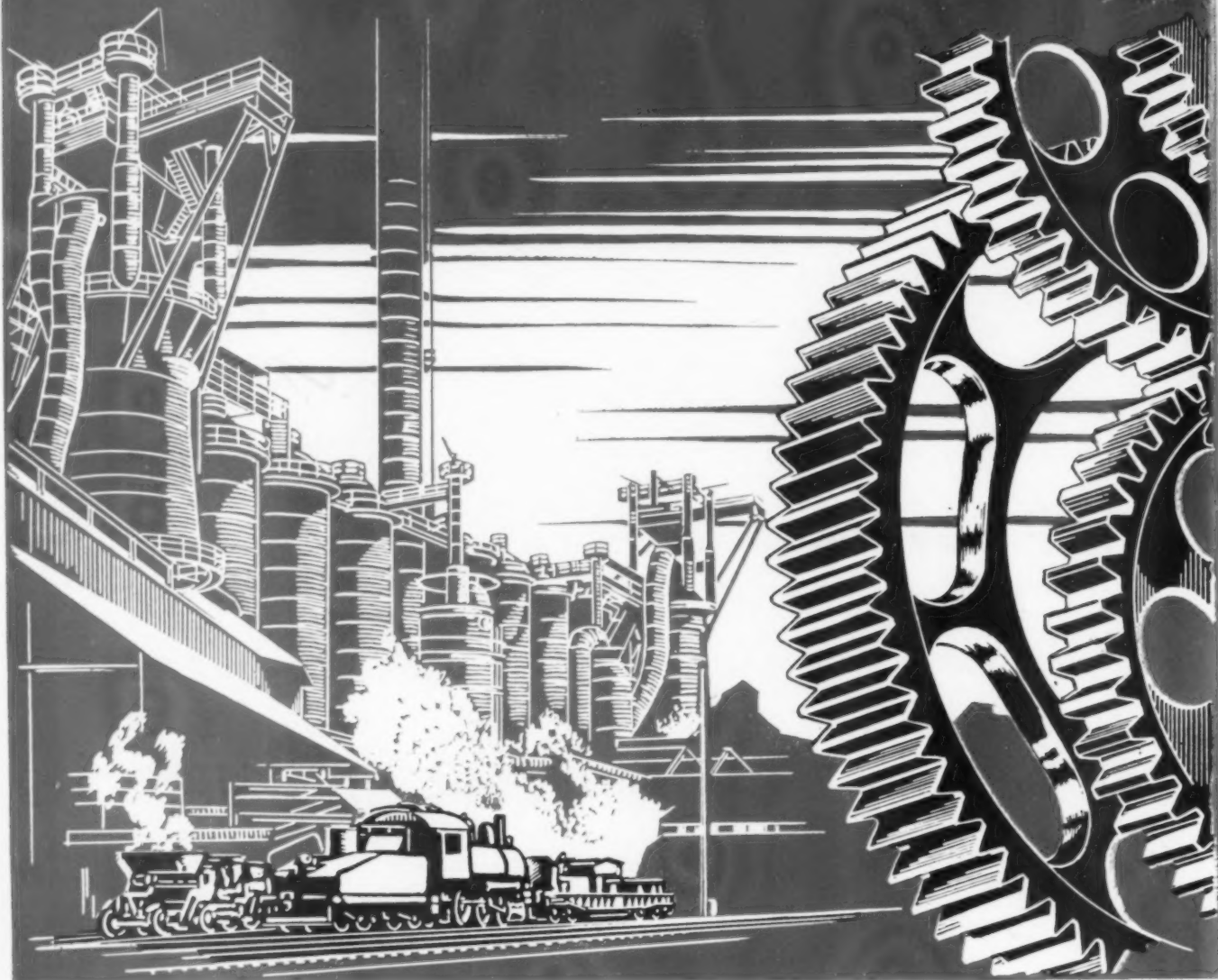
*Write for Bulletin*

**INLAND STEEL COMPANY**

38 South Dearborn Street, Chicago 3, Illinois • Sales Offices:  
Detroit, Indianapolis, Kansas City, Milwaukee, New York, St. Louis, St. Paul

**INLAND  
STEEL**

## TYCOL ENGINEERED LUBRICATION



**cuts "down time" . . . increases production**



**Boston • Charlotte, N. C.  
Chicago • Detroit  
Pittsburgh • Philadelphia  
Tulsa**



Under all conditions the proved performance of Tycol lubricants more than meets their recommended service.

Rigidly controlled and tested during manufacture, Tycol oils and greases retain their uniformity within each classification — from the first drain to the last. This unvarying high quality accounts for Tycol's wide acceptance among operators interested in cut-

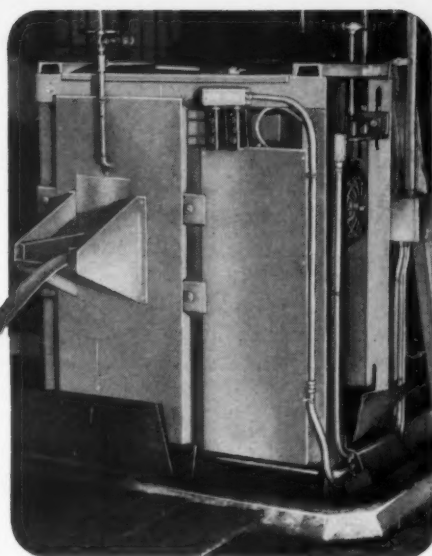
ting down time . . . top efficiency . . . increased production.

Whatever your lubrication need, there's a Tycol oil or grease *scientifically engineered* to afford greater economy . . . longer machine life for every piece, and type of equipment. Let Tide Water Associated help you select the best lubricant for your particular need. Write your nearest Tide Water Associated Office for full details.

**LUBRICATION—"ENGINEERED TO FIT THE JOB"**



## BRUSHES GOT THIS JOB OUT OF A "PICKLE"



THIS manufacturer of thermo-static bimetals for temperature control was literally in a "pickle". Following annealing operations, the material was transferred to pickling tanks for removal of the scum and scale it had accumulated. It came out of the tanks clean but there was a high scrap loss due to resulting corrosion.

Then brushing was suggested.

A special machine was developed through which the metal strip is fed between two sets of power driven Osborn Master wire wheel brushes. It moves through fast, emerges sparkling clean. There is no material loss and the smooth brushed surface makes the strip easier to re-roll. Illustration at top shows unit designed to brush light gauge metals and the enclosed machine shown in the

inset services the heavier gauges.

Many plants are today using Osborn Brushes to speed production, save time and money. But others are missing these benefits, not aware of the important production jobs being done by modern brushing methods. Let an Osborn sales engineer introduce you to brushes not as a product but as a process with a proved record for cutting costs.



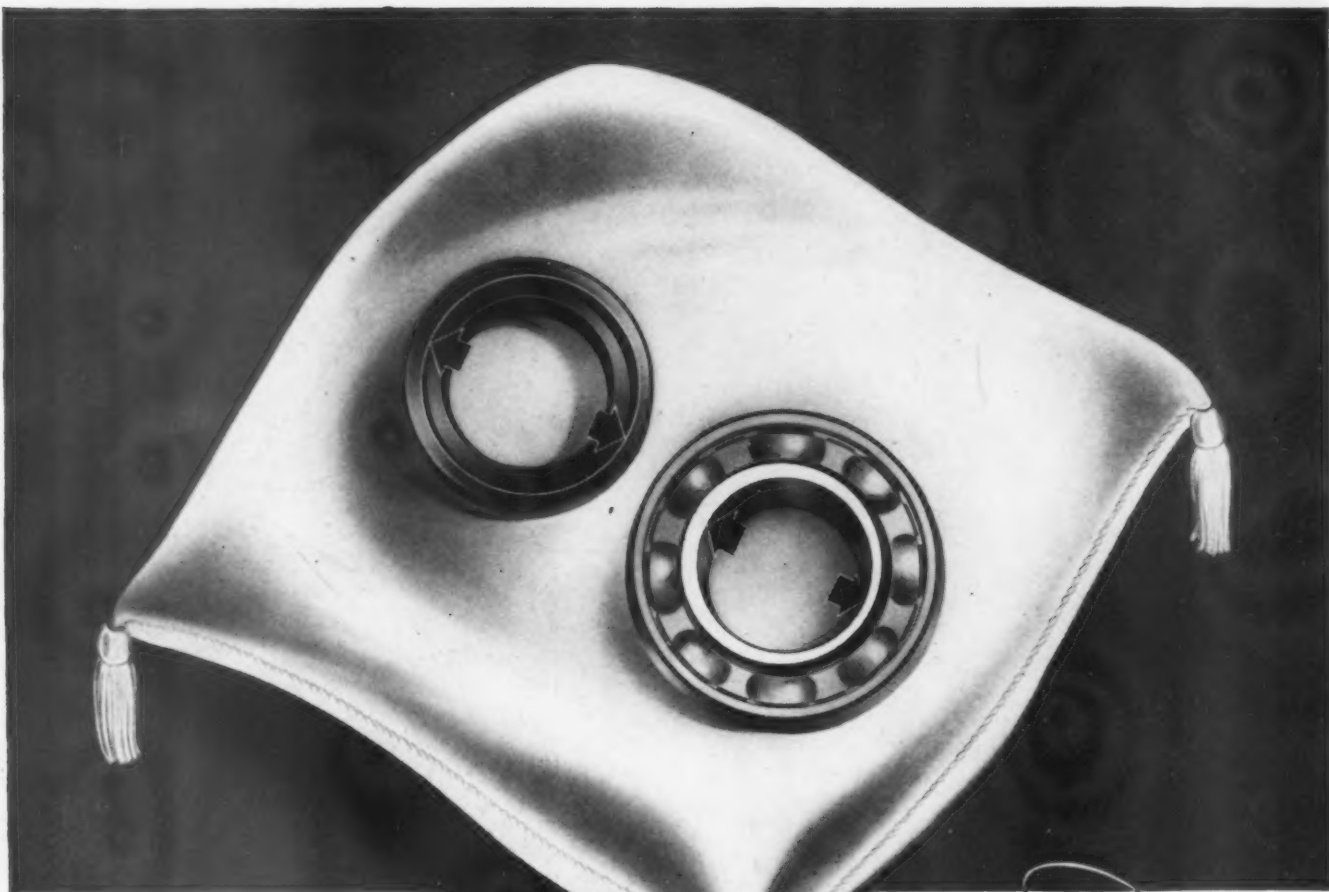
**THE OSBORN MANUFACTURING COMPANY**

5401 Hamilton Avenue

Cleveland, Ohio

WORLD'S LARGEST MANUFACTURER OF BRUSHES FOR INDUSTRY



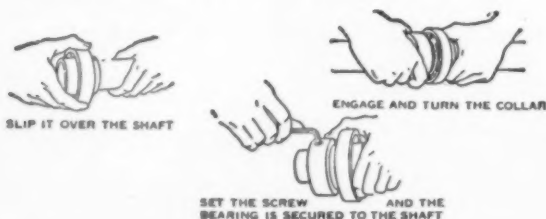


## DOUBLE RING

*Wedding*

**I**NSTEAD of orange blossoms, matching eccentric cams. That's how these two rings "wed" a Fafnir Ball Bearing to any standard size shaft... without shouldering, threading, lock nuts or adapter devices. It's the self-locking collar feature of the famous Fafnir Wide Inner Ring Ball Bearing... the Fafnir development that ended years of unnecessary bearing cost and complications.

Industries, hobbled with plain bearing equipped machinery, were able to change over to ball bearings... at a time cost of only a few minutes per bearing and no cost for machining or new shafting. And new machines featured these Fafnir Wide Inner Ring Bearings that can be removed as easily as they are installed.



Nothing could be simpler. The bearing slip-fits right onto the shaft. A quarter turn of the collar engages the eccentric cam with the matching cam of the extended inner ring, locks collar, bearing and shaft in a binding grip. As additional precaution, a set-screw in the collar is tightened to give a wedging action that is proof positive against shock or reversing loads. This Fafnir Wide Inner Ring Bearing is available in a full range of inch shaft dimensions for use in users' own housings and in a complete line of power transmission units... pillow blocks, hanger boxes, blower boxes and cartridges.

It's so simple, so sensible that you're sure to say the usual "Why didn't someone think of that before?" The answer, of course, is that thinking of simple, sensible ways to improve ball bearings is just the job Fafnir is set up to do. The Fafnir Bearing Company, New Britain, Connecticut.

**FAFNIR** BALL BEARINGS  
MOST COMPLETE LINE IN AMERICA

Toda:  
the dev  
Roel  
est val

Wire r  
like any  
can be  
stallati  
against  
its Fiel  
Ever  
ough k

Manufa  
and Inc  
High a  
Cold R  
Bridges

# CONFIDENCE . . . how much is it worth?



**I**N 1841, two years before the first telegraph line was installed in this country, and when there were but 27 states in the Union, John August Roebling was inspired with the idea of making a new kind of rope of unheard of strength and flexibility. His confidence in his idea caused him to risk everything he had on the development of his new rope.

How much is his confidence worth to Industry today, which couldn't turn a wheel without the modern wire rope?

Today, the John A. Roebling's Sons Company invests much time, effort and money in the development of improved products to keep alive the confidence of its many customers. Roebling values this confidence as its greatest asset. That's why it offers you the greatest value for every dollar you invest . . . in any Roebling product.

## HOW TO SAVE WIRE ROPE DOLLARS

Wire rope is a machine of many parts and, like any machine, even the finest of wire ropes can be destroyed quickly through faulty installation or improper maintenance. To insure against this possibility, Roebling established its Field Engineering Service.

Every Roebling Field Engineer has a thorough knowledge of wire rope . . . its types, its

uses, its features and limitations. This knowledge plus the experience he gains in his daily contacts can be a great asset to you . . . helping you to solve those tough wire rope problems . . . giving you more service for each wire rope dollar.

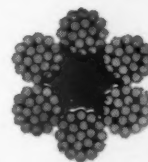
Get to know your Roebling Field Engineer. Call him at your nearby Roebling Branch Office.

## JOHN A. ROEBLING'S SONS COMPANY

TRENTON 2, NEW JERSEY

Branches and Warehouses in Principal Cities

## FOR EXAMPLE — "BLUE CENTER" STEEL WIRE ROPE



Roebling entrusts your confidence in Roebling and Roebling products to the performance of its "Blue Center" Steel Wire Rope. It is the best rope Roebling knows how to make. It is available as preformed or non-preformed, in a complete range of sizes and constructions to meet a great variety of operating conditions. Its uses are almost unlimited and its performance is consistently economical.

# ROEBLING

A CENTURY OF CONFIDENCE



Manufacturers of Wire Rope and Strand • Fittings • Slings • Screen, Hardware and Industrial Wire Cloth • Aerial Wire Rope Systems • Hard, Annealed or Tempered High and Low Carbon Fine and Specialty Wire, Flat Wire, Cold Rolled Strip and Cold Rolled Spring Steel • Ski Lifts • Electrical Wire and Cable • Suspension Bridges and Cables • Aircord, Aircord Terminals and Air Controls • Lawn Mowers



### Why Not Waterproof Newspapers?

If there were any real need for them, you probably would see waterproof newspapers to protect new bonnets from sudden showers. With the help of chemistry, papermakers and converters are adapting their products to many unexpected jobs—and giving paper many surprising new qualities.

For example, with Monsanto lacquers, paper can be given a high gloss—or the feel and appearance of leather. With several different Monsanto plastics, it can be laminated into dense, hard sheets and special shapes with strengths rivaling those of metals.

One new Monsanto chemical produces blueprint paper of greater brilliance and depth of color—which leads, in turn, to more legible blueprints.

Another increases paper's resistance to water, improves its strength and gives it greater resistance to aging. Still others serve in the paper-making processes to control such enemies of efficient production as slime and pitch—or to improve such operations as sizing and finishing.

For further details on these and the other products listed below, call or write your nearest Monsanto office for a copy of the new folder, "Monsanto Products for the Pulp and Paper Industries."

MONSANTO CHEMICAL COMPANY, St. Louis 4  
District Sales Offices: Akron, Birmingham, Boston, Charlotte, Chicago, Cincinnati, Cleveland, Dayton, Detroit, Houston, Los Angeles, New York, San Francisco, Seattle, Springfield, Washington, D. C.  
In Canada: Monsanto (Canada) Limited, Montreal.



#### Write for new folder on these products for paper:

Alcohol	Lacquers	Santobrite* (fungicide)
Aluminum Sulfate	Mercloc* (sodium hypochlorite)	Santalites* (coating resins)
Ammonia, Anhydrous	Mersize* (sizing additive)	Santomer* (wetting agents)
Ammonia, Aqua	Mertanol 7L* (for pitch control)	Santosite* (sodium sulphite)
Ammonium Phosphates	Mertane WB-2* (paper precoat)	Sodium Aluminate
Aroclors* (plasticizers)	Methyl Salicylate, U. S. P.	Sodium Bisulfite, Anhydrous
C. P. Acids	Polyvinyl Butyral (coatings)	Sodium Sulfate, Crystal
Chlorine	Resimene* (melamine resins)	(Glauber's Salt)
Coumarin Monsanto	Resinox* (phenolic resins)	Tetrasodium Pyrophosphate
Diphenyl	Salt Cake (sodium sulfate, technical)	Thalid* (laminating resins)
Hydrochloric Acid	Santicizers* (plasticizers)	Trisodium Phosphate
Heat-Sealing Coatings		

\*Reg. U. S. Pat. Off.

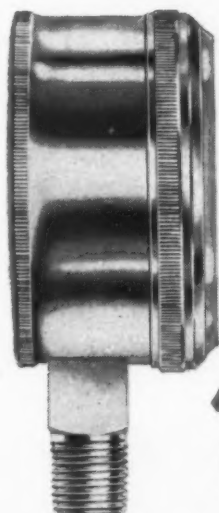
SERVING INDUSTRY...WHICH SERVES MANKIND



FOR  
**prompt**  
DELIVERY!

# WITT

## HIGH QUALITY GAUGES

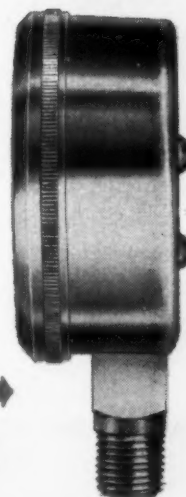


**WITT OXY-ACETYLENE**  
(high pressure)  
For pressures up to 3000 pounds.  
(Model shown is regular coined case  
available in both high and low pres-  
sure gauges.)

### ASSURE LONG-LIFE PERFORMANCE

**W**herever oxy-acetylene service demands unexcelled quality and performance of pressure gauges *plus immediate shipment*, WITT GAUGE COMPANY's complete line of high and low pressure gauges satisfies the most exacting requirements. These precision 2" and 2½" gauges are the result of combining highly specialized equipment with expertly trained personnel—plus years of experience in making precision pressure regulators. WITT is one of NINE manufacturers having approval of Underwriters' Laboratories for high pressure gauges! Gauges are finished in polished and lacquered brass, scratch brush brass, nickel and chromium-plated. Connections: standard lower, right or left hand.

Catalog and quotations upon request.



**WITT OXY-ACETYLENE**  
(low pressure)  
For pressures up to 500 pounds.  
(Model shown is plain (Peerless)  
case available in both low and high  
pressure gauges.)

**Witt** GAUGE COMPANY  
DIVISION OF NATIONAL PRESSURE COOKER COMPANY

EAU CLAIRE, WISCONSIN

## WIREBOUNDS

REDUCE BOX WEIGHTS UP TO 33%  
SLASH DAMAGE CLAIMS TO ZERO  
AID 25% OVER-ALL SAVINGS

REPORTS

**WEIL-McLAIN**

MICHIGAN CITY, INDIANA



Typical of Wirebound weight reduction at Weil-McLain is the 29½ lb. crate at left which replaced the 75 lb. box at right.

When the Weil-McLain Company converted to Wirebound Boxes and Crates and adopted new packing and handling procedures over-all shipping room savings of 25% were realized. Officials of the company found that the adoption of Wirebounds specifically designed to carry their boiler parts brought savings in every phase of shipping activity.

Storage space requirements were reduced 80% and an entire building was freed for other use. One man, using a hand truck, brings 30 flat Wirebound mats to the conveyor line in one load compared to 6 or 8 of the old type boxes. Because Wirebounds are delivered 2/3 assembled, container assembly and packing time were reduced more than 50%. Lift truck handling and stacking of packed Wirebounds brought further savings. Also of great importance—the resiliency of Wirebounds, resulting from the time-tested combination of steel, wire and thinner wood, eliminated shipping damage losses.

You can enjoy the same benefits brought to Weil-McLain. Send the coupon below for further information . . . or for a Wirebound Sales Engineer to study your requirements, design, test and submit samples of Wirebounds created specifically to carry your products safely, efficiently and at lower cost.



154 lb. ash pit is carried in the 29½ lb. Wirebound. In addition to cutting shipping weight, this crate is packed in 1/3 the previous time.



The 42 lb. Wirebounds being stacked above each carry a 335 lbs. ash pit. The bottom Wirebound carries the load of 9 others—a total of 3015 lbs.

### Mail This Coupon Today!

WIREBOUND BOX MFGS. ASSN.  
ROOM 1821, BORLAND BLDG., CHICAGO 3, ILLINOIS

☐

SEND COMPLETE  
LITERATURE

☐

SEND A SALES  
ENGINEER

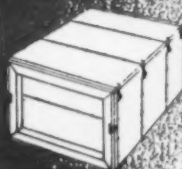
NAME \_\_\_\_\_ POSITION \_\_\_\_\_

FIRM NAME \_\_\_\_\_

ADDRESS \_\_\_\_\_

CITY \_\_\_\_\_ ZONE \_\_\_\_\_ STATE \_\_\_\_\_

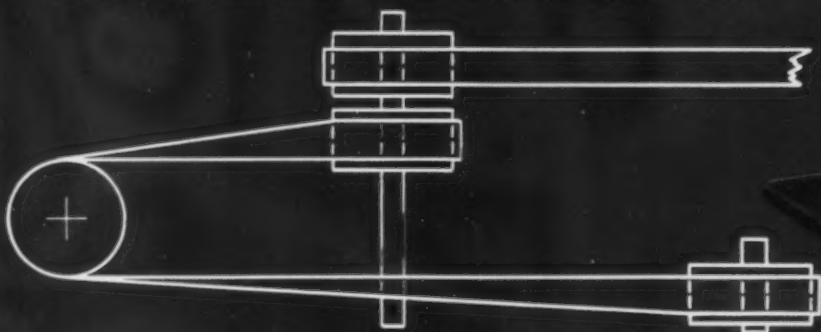
PRODUCT \_\_\_\_\_



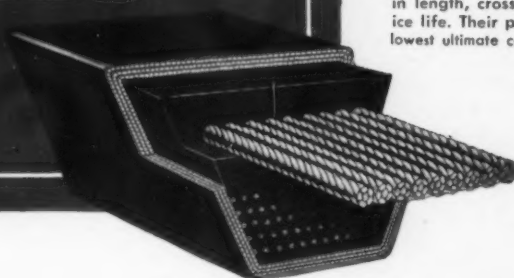
*Wirebound*  
**BOXES & CRATES**

G.T.M. -Specified

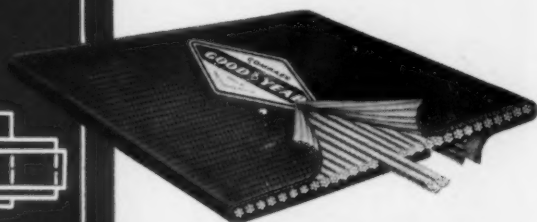
GOODYEAR INDUSTRIAL RUBBER PRODUCTS



# MILL- PROVED MONEY SAVERS



Long, Trouble-Free  
Service with these  
Goodyear Dependables



**ENDLESS COMPASS BELTS** for compressors, generators, fans, line-shafts and other heavy-duty drives. In countless installations they have outlived and outperformed ordinary belts three and four to one.



**EMERALD CORD AIR HOSE** — a truly "super" air carrier. Lighter than ordinary hose, yet far tougher, stronger, longer lasting, thanks to new construction. Oil-resistant tube. Best buy for heavy-duty service.

**E-C CORD MULTI-V-BELTS** are uniform in length, cross section, pull and service life. Their perfect teamwork insures lowest ultimate cost.

**H**ERE are three of a long list of Goodyear products that have won a notable reputation in industrial use. With them you get the economy, the dependability, the long-lived service that have made Goodyear rubber products first choice of industry for years.

And more — you get the expert counsel of the G.T.M. — Goodyear Technical Man. His

on-the-spot specification gives you these superior products in the exact size and construction your problem requires. For more detailed information, why not consult the G.T.M.? Write: Goodyear, Akron 16, Ohio or Los Angeles 54, California.

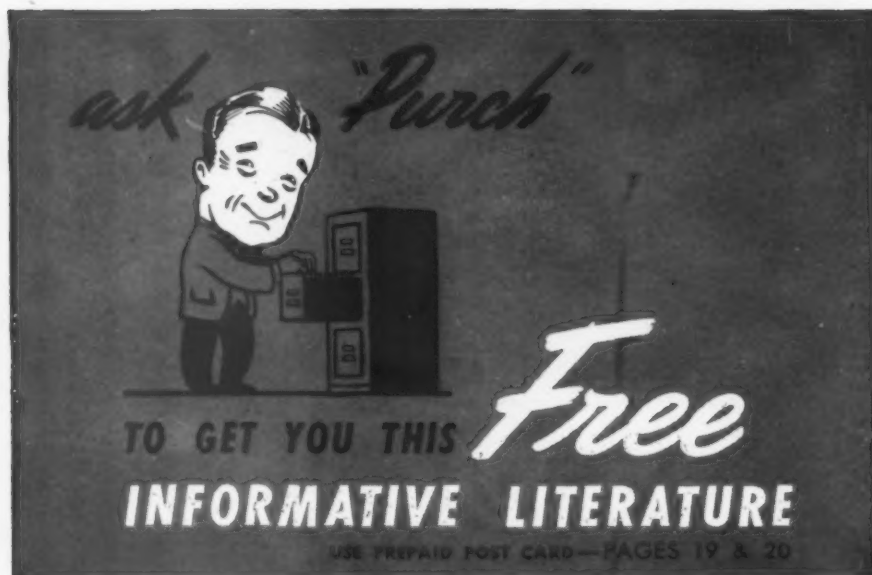
**FOR HOSE, BELTING, MOLDED GOODS, PACKING, TANK LINING** built to the world's highest standard of quality, phone your nearest Goodyear Industrial Rubber Products Distributor.

Compass, Emerald Cord, E-C Cord — T.M.'s The Goodyear T. & R. Co.

# GOOD YEAR

THE GREATEST NAME IN RUBBER





**1. CARBOLOY Cutting Tools**—Carbonyl-tipped cutting tools is the subject of illustrated catalog covering the Nelco Tool Company's entire line, which also contains recommendations for operation and maintenance of tools, conversion chart, information on resharpening, etc.

**2. VACUUM LEAK Detector**—Bulletin describes Vacuum Leak Detector, Model 24-101, a portable instrument for simple and accurate location and measurement of leaks in evacuated or pressure systems. Equipment can be used where 115 v. 60 cycle power is available. Consolidated Engineering Corp.

**3. BUILDING MAINTENANCE**—Materials for every phase of building maintenance are listed in catalog-handbook just issued by the Continental Asbestos & Refining Corp. Book consists of four sections (1) floors of all kinds; (2) coating for building interiors and exteriors; (3) heat system, water system and metal conditions; (4) industrial cleansers and disinfectants.

**4. BATTERIES, Industrial**—Maintenance Manual for Philco Motive Power and Rubber Jar batteries, is title of new publication issued by Philco Corporation, Storage Battery Division. It deals with theory, installation, operation, charging and maintenance.

**5. BLOWERS, EXHAUSTERS**—Centrifugal type blowers and exhausters are the subject of bulletin 5-B issued by the Lamson Corporation—Allen Billmyre Division. Bulletin contains page on ordering data. Capacity tables, features of design and general specifications are included.

**6. LABEL WIRE MARKERS**—Sample of Quik-Label wire markers, and bulletin giving complete information about Quik-Label

Code Card with self-starter strip, are available from the Brady-Parkinson Company. Cards conform to N.E.M.A. and A.S.A. specifications; color codes are stocked in 15 solid N.E.M.A. colors.

**7. TUBULAR PRODUCTS**—Engineering Data and Stock List published by the Wallace Tube Co. covers Mechanical Steel tubing, heat exchanger tubing, condenser tubing, boiler tubing, stainless steel tubing, pressure tubing, stainless seamless tubes, stainless steel pile, welded, etc. Specifications for each type are given.

**8. TRACING CLOTH**—Twelve page booklet containing 8½" x 3½" samples and specifications of four types of Arkwright tracing cloth for ink or pencil drawings, is available from the Arkwright Finishing Co.

**9. MOTORS, Electric**—Definitely new. Cut-out portrays the Fairbanks-Morse Axial Air Gap Motor, length of which is approximately one-half that of conventional motor, along with reduction in weight of approximately 30%. Scale shows actual size of various motors ½ hp to 10 hp. With slight modifications motor can be used as horizontal, belt drive, vertical, flange mounted, or splash-proof motor. Fairbanks, Morse & Co.

**10. CARTON PRINTER**—The Young Carton printer which prints or imprints either set up or knocked-down shipping containers, and prints cartons "quicker than you can stencil them" is described in bulletin issued by N. A. Young Co.

**11. ELECTRICAL TOOLS**—Metalmaster drills, drill stands, hole saws, bench grinders, heavy duty grinders, buffers and polishers, grinder and buffer, and other equipment are described in Catalog No. 50 issued by the Bradford Machine Tool Co.

**12. EXTRUDED PLASTICS**—Here's a new book you should have in your plastics file for ready reference. Contents include information on selection of material, tool making, how and why of extrusions and uses of extruded plastics, how and why of injection molding, and characteristics of thermoplastics. More than 270 stock extrusions are shown. Detroit Macoid Corporation.

**13. TIMING DEVICES**—Circular describes the Haydon timing devices which include repeat and interval timing, time delay relays, contactors, interrupters, clock fit-ups, elapsed time indicators, timers and other apparatus for nearly every timing application. Haydon Manufacturing Co.

**14. UNDERGROUND CABLE**—Simplex Anhydrex Underground cable for power circuits, series street lighting circuits, etc., is detailed in bulletin issued by Simplex Wire and Cable Co. Cables are neoprene sheathed.

**15. SILVER SOLDERS**—Precious metals are the subject of bulletin issued by D. E. Makepeace Co. Special Makepeace solder products include solder-filled wire, solder-flushed wire, and solder-flushed flat stock. Solders are available in strip, wire or rod, solder rings, washer form, burred, powdered, etc. Bulletin lists numerous types available.

**16. NUT DRIVERS**—Circular in color describes the Vaco deluxe super hard spin-hex nut drivers with plastic handles having colored screw top caps to indicate size. Vaco Products Co.

**17. BOX TYPE CAPACITORS**—Catalog No. 50, Sprague low-voltage industrial capacitors for power factor correction, is available from Sprague Electric Co. Text explains how the capacitors can "save you money." They are available for wide variety of installations ranging from those requiring only a few KVA of correction to those requiring hundreds. Sprague Electric Co.

**18. METAL SURFACE PROTECTION**—New bulletin just issued by American Chemical Paint Co., No. P-100-21, is quick reference list of rust proofing chemicals, protective coatings, metal cleaning chemicals and inhibitors.

**19. BUILDING MAINTENANCE**—16-page condensed catalog describes Sonneborn "Building Savers" for construction and maintenance. It includes floor treatments, waxes, waterproofing and damp-proofing, paints and protective coatings, roof coatings, etc. Building Products Divn., L. Sonneborn Sons, Inc.

**20. CARD INDEX**—Circular describes the Wheeldex Cub, styled the "1000 card index of a thousand uses." Cards are easily changed, both sides are visible. The "Cub" is furnished complete with plain white cards and 45-division alphabetic guide set. Standard or special card forms printed to meet specific needs. It is ideal for desk records, fits deep desk or file drawer. Wheeldex Manufacturing Co., Inc.

**21. WIRE PALLET**—The Pittsburgh eight-way steel wire pallet is subject of (Please turn to page 16)

**ASK "PURCH" FOR THIS FREE, UP-TO-DATE LITERATURE**  
Four Pages—14-16-19-20

Use convenient prepaid postcards on pages 19 & 20

## POP'S SCHOOL of FILING



# "NO EXCUSE FOR FILE ABUSE"

—says Pop the Foreman

ONCE AGAIN manufacturing competition is getting keen. There's the problem of keeping production costs and profit margins in line with the prices consumers are willing to pay. All of which means putting *Maximum Efficiency* to work in every department, in every operation, and in the use of every tool.

On mass-work especially, the proper use and care of files enters heavily into savings in man-hours, materials and new-file costs. Here are some timely suggestions which it will pay to post in the tool-room, on shop bulletin boards, and over work benches:

- Don't throw files among other tools or objects.
- Don't lay files on top of, or stack them against, one another. Keep them sepa-

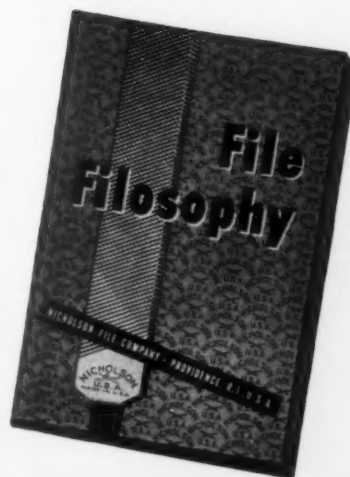
rate—either standing with their tangs in holes or hung on a rack by their handles.

- Keep files in a dry place so rust will not corrode their cutting edges.
- Keep files clean of filings or "chips." After every few strokes tap the file on wood (not on metal) to loosen the chips. Files should also be brushed frequently with file brush or "card."
- Never "tear" into the work with too much pressure on the forward, or cutting, stroke.
- Never "drag" the file back under needless pressure.
- Use *The right file for the job.*

The better the file the greater the reward of care. Nicholson and Black Diamond files are of the highest quality—made to serve long under normal circumstances, still longer under proper use and care. For your file needs, contact your industrial distributor.

## FREE BOOK...

For further helpful information on kinds, use and care of files, write for a copy of the famous 48-page Nicholson book, *FILE PHILOSOPHY*.



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# NICHOLSON FILES FOR EVERY PURPOSE





(Continued from page 14)

bulletin issued by Pittsburgh Steel Products Co. Standard sizes 36" x 45", and 48" x 48". Pallets load tested to 20 tons without failure. Sizes available for converting platform pallet to container type; sides collapse for compact return; also, sides contain hook plates for crane handling.

**22. UNIT PUMPER**—Blueprint, sketches, photographs and complete specifications of National Supply Company's type D-5 unit pumper are contained in Bulletin 332. The pumper has walking beam rating of 5200 pounds, and is readily adaptable for medium and high speed prime movers. Wrist pins are equipped with self-aligning roller bearings.

**23. BENDING MACHINE**—Rotary type hydraulic bending machine, Wallace 550 series, for cold bending tubes, pipe, bars, structural shapes, extrusions and rolled shapes, is described in Bulletin 33, Sec. A3. Machine is available in eight sizes up to 6½" O. D. It is made in two types for bends up to 90° or bends up to 180°. Wallace Supplies Mfg. Co.

**24. DEWATERIZER**—Bulletin 129 describes and illustrates the Robins Eliptex Dewaterizer for removing surface moisture from coal and other materials in sizes as small as ½" x 0". On smallest sizes, machine leaves as little as 12% surface moisture; on larger sizes, as little as 4%. Machine and method are described in detail. Robins Conveyor Divn., Hewitt-Robins, Inc.

**25. CARBOLOY TOOLS**—Supplement of 16 pages, (GT 199) to its general tool catalog GT-175R, listing new products, specifications and price changes, etc., has been issued by Carboloy Co., Inc. New products listed include expanded line of standard solid Carboloy boring tools and new standard line of boring bars.

**26. ABRASIVE WHEELS**—Pocket size 48-page handbook for industrial users of abrasive wheels, has been issued by Chas. H. Besley Co. It tells about Steel-bac grinding discs, a bolted-on product. It contains standard marking system chart for Besley-Titan wheels, and also describes wet grinders, dry grinders, and piston ring finishing machine.

**27. CASTING RESINS**—"Paraplex for Laminating and Casting Applications" is

title of new booklet issued by Resinous Products & Chemical Co. Resins are of the thermosetting type. Techniques for casting and laminating are detailed.

**28. BOOKLETS ON PACKAGING**—Revised copies of "Little Packaging Library" booklets, dealing with such subjects as "How to Seal Corrugated Shipping Boxes"; "How to Stack and Load"; "How to Ship More Economically"; "How to Specify Corrugated Boxes"; "How to Engineer Corrugated Shipping Boxes", etc., is now available from the Hinde & Dauch Paper Co.

**29. CLEAN FLOORS**—Free sample of Sol-Speedi-Dri, and Folder FB-19 describing this floor cleaner which absorbs oil and frees floors from dangerous grease accumulations will be sent you by Safety & Maintenance Co., Inc.

**30. WELDING ELECTRODES**—Enlarged edition of bulletin covering Ampcoley Resistance Welding Electrodes and Alloys, known as Bulletin 68B, is available from Ampco Metal, Inc. It catalogs a comprehensive line of spot welder tips and holders, seam welder wheels, and other resistance welding accessories.

**31. PERMANENT MAGNETS**—New booklet on permanent magnets has been issued by the Metallurgy Division of the General Electric Chemical Department. It gives all general information on permanent magnets as well as technical data on characteristics, design, properties and applications of the G. E. material.

**32. PLASTICS**—New 64-page booklet on Textolite laminated plastics has been published by the Plastics Division of the General Electric Company. It gives complete information about all types and lists 44 different grades of the sheet material along with their electrical, physical and mechanical properties. Textolite products include tubes and rods, bearing materials, silent gears, decorative surfaces, translucent sheets, molded laminated plastics, low-pressure laminated plastics, etc., and ordering instructions. You should have copy.

**33. ROTARY FILES**—"Grobet Rotary Files" is subject of 16-page illustrated booklet on rotary files for every industrial purpose, and includes ball, oval, cylindrical tree, cone, inverted cone and other shapes, and jeweler and diesinker rotary files. Grobet File Co. of America.

**34. GERMICIDE**—Booklet describes Pittcide, improved granular germicide and disinfectant announced by Columbia Chemical Division of the Pittsburgh Plate Glass Co. Details of the correct solution strength for 162 applications in 17 major fields are included. Pittcide permits the germicidal action of chlorine to be employed surely, safely and easily. It is soluble in warm or cold water.

**35. CUTTER SHARPENER**—Publication M-1552 describes Cincinnati Contour Cutter Sharpening Machine in detail. It sharpens form cutters on the periphery rather than on the face of the teeth, developing a much better cutting edge. Cincinnati Milling & Grinding Machines, Inc.

**36. PALLETS and TRAYS**—Here's something new in pallets and trays. Bulletin tells about Superior pallets and trays featured by lightweight and durability. Trays have molded curve ends which permit prongs of fork truck to slide under load. Trays and pallets may be used for making knock-down bins. Units are easy to handle. Plywood Specialties Corp.

**37. TANK JACKS**—Bulletin Tank 47 describes Simplex Jacks for supporting and leveling tanks. Screw adjustment produces exact leveling and gravity flow. Templeton, Kenly & Co.

**38. WELDING FITTINGS**—Zephyrweld Stainless Steel Welding Fittings Catalog, No. 747, 16 pages, details physical characteristics, fabrication, adaptability of welding fittings to other fitting types, and complete information covering the methods in which these fittings are installed with light gauge commercial tolerance (O. D.) stainless steel tubing to provide lightweight liquid conveying lines. Try-Clover Machine Co.

**39. SILICONE INSULATION**—Specifications for Rewinding motors with Silicone Insulation (Silicone Notes No. B-30-11) has just been released by Dow Corning Corporation. Tests show that Silicone Insulation will withstand 100° C more heat and have at least 10 times the best insulation resistance of the best electrical insulation previously known. Specifications list all the materials necessary to insure maximum service life in motors rewound with Silicone Insulation.

**40. BUFFS, WHEELS**—Udylite Buffs "for every buffing requirement" are illustrated in new bulletin, which indicates the special service use of each type. Compositions are also illustrated and described. The Udylite Corp.

**41. INSULATING VARNISHES**—Wall chart presents essential physical, chemical and electrical data on Harvel and Irvington insulating varnishes, lists suggested uses of baking and air drying insulating varnishes; finishing and sticking varnishes; oil-proof and machinery enamels and insulating paint; gives baking and drying times, dielectric strengths and resistance to oil, etc. Irvington Varnish & Insulator Co.

**42. COOLANTS**—Oakite Soluble Oil is title of booklet on specially compounded soluble oil which is said to provide many advantages and economies as a coolant (Please turn to page 19)

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Thermoid concentrates its manufacturing for industry on the well integrated line shown below. The Company itself, is large enough for precise, low cost, high quality production, but small enough to be quickly responsive to customers' specific problems. That's one of the reasons why—

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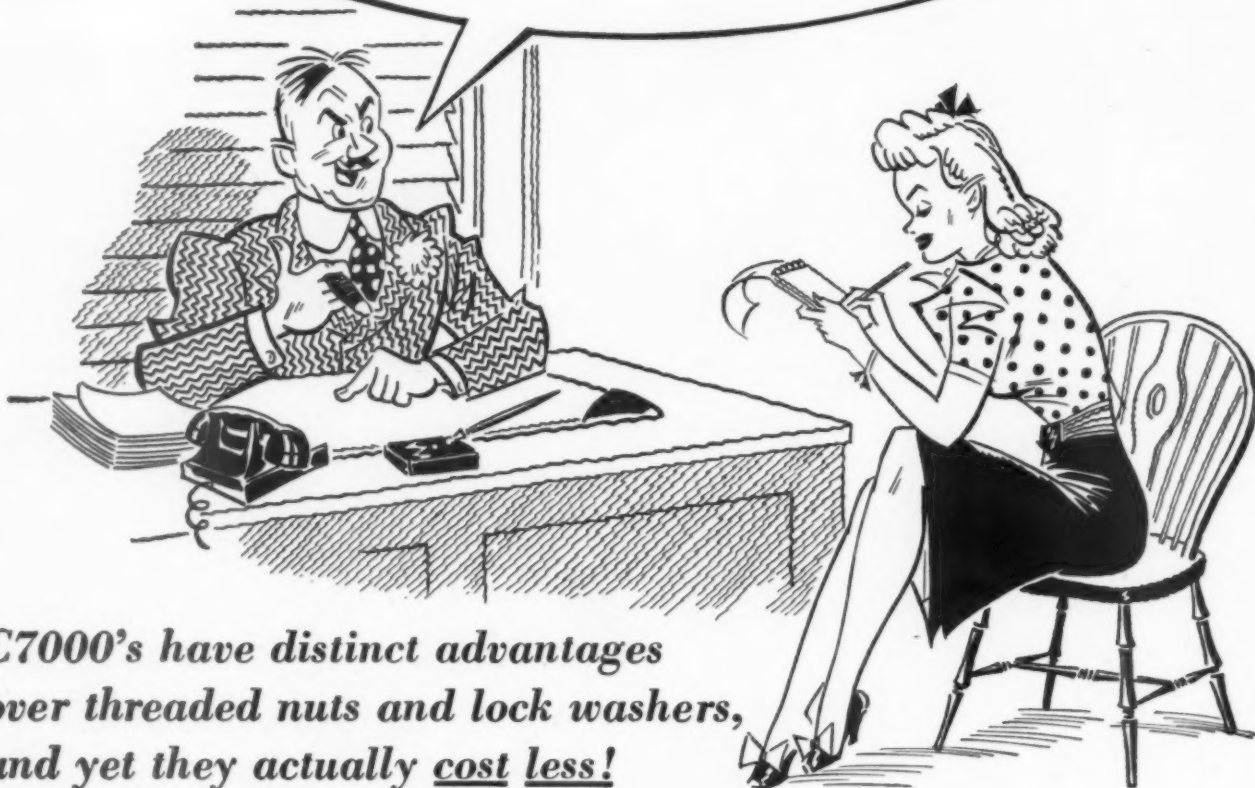
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MEMO TO JONES IN ENGINEERING: "KEEP UP THE GOOD WORK! YOUR HUNCH ON C7000 SPEED NUTS IS SURE PAYING OFF IN REDUCED ASSEMBLY COSTS!"



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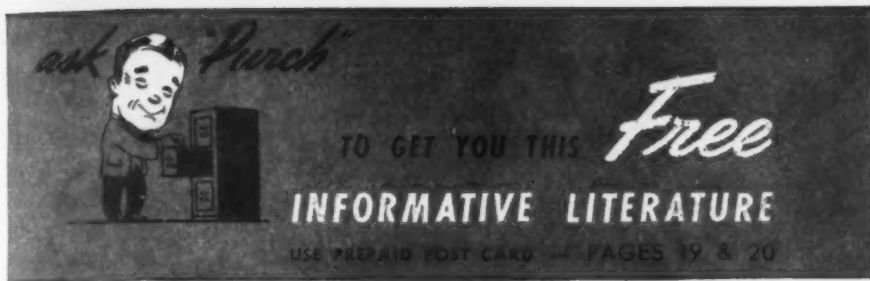


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**P A S T E T E S T T H I N G I N F A S T E N I N G S**



(Continued from page 16)

and lubricant in cutting, machining, grinding and related operations on ferrous and non-ferrous metals. Oakite Products, Inc.

☐ **43. HEIGHT GAUGE**—Bulletin describes Pratt & Whitney Electrolimit Height gage, a precision instrument for use in inspection rooms, tool rooms, etc. It is particularly useful in comparing or transferring gage block-established dimensions and in checking runout. It is available with 12" column and with 24" column.

☐ **44. HEAT EXCHANGERS**—Bulletin 1603 describes Durco heat exchangers for heating and cooling corrosive solutions. These exchangers are made of Duriron, a high silicon iron which has high resistance to acids, and is particularly resistant to sulfuric, nitric and acetic acids. They are recommended for heating plating solutions, heating brine, cooling solutions for bleach make-up tanks, cooling aluminum anodizing and chrome plating solutions, etc., etc. The Duriron Co.

☐ **45. BALL BEARING CENTERS**—Bulletin 472 describes Red-E standard ball bearing centers recommended for use with high speed steel cutting tools. The Ready Tool Co.

☐ **46. PLATING**—Catalog illustrates and describes "Sealed-Disc" filters and "Centri-Poise" pumps, and explains fundamentals of filtration for plating applications. Alsop Engineering Corp.

☐ **47. CHAIN DRIVE**—Link-Belt 3/16" Pitch Silent chain is the subject of a 16 page illustrated book No. 2010 devoted to "Industry's biggest little chain drive for fractional horsepower drives." Numerous installations are illustrated. Book contains dimensions of sprocket wheels, horsepower ratings, and information on how to select a chain drive, etc. Link-Belt Co.

☐ **48. SPECIAL MACHINERY**—Bulletin illustrates, describes the facilities of the Lake Erie Engineering Corp. for the de-

sign and manufacture of special industrial machinery.

☐ **49. CAN LABEL Adhesive**—Bulletin, No. 16, describes improved can labeling adhesives, detailing two grades of lump form hot pick-up gums, one grade for cold room temperatures and warm cans and a grade for room temperature to hot cans. Lap pastes for regular and varnished lap labels are also included. Paisley Products Inc.

☐ **50. STAINLESS STEELS, (Cutting)**—A 12-page reprint describes "Flux-Injection Cutting of Stainless Steels" from 1/8" sheet to heavy slabs, and time-saving cutting of stacks. The new process is said to make for high degree of cut control with economical, uniform high quality cutting. Air Reduction Sales Co.

☐ **51. DRILLING, TAPPING Machines**—Bulletin A-33 describes completely new line of small multi drilling and tapping machines which are said to speed production on light work of small holes where super-sensitivity and high speed are of paramount importance. Machines are available in 3 feed arrangements—hand and foot feed, combination hand and foot and air-oil feed, air feed. National Automatic Tool Co.

☐ **52. BOXES, CRATES**—Circular describes Craveneer, a strong, light, attractive water-resistant packaging material, which consists of wood core with two sides covered with heavy southern kraft paper. Craveneer is said to make for weight savings and reduced freight charges. Chicago Mill & Lumber Co.

☐ **53. SMALL TUBING**—Data sheets 1-1, 2-1, and 6-1 list available materials, describe Weldrawn Tubing, and give mechanical properties and physical characteristics of various compositions, respectively. Superior Tube Co.

☐ **54. BRASS, TIN BRONZE Welding**—How to weld tin bronzes and brass is dis-

cussed in procedure sheets, recently issued by Ampco Metal Inc. They cover the use of Ampco bronze welding electrodes in joining and overlaying these alloys.

☐ **55. VALVES & FITTINGS**—Catalog No. 47 describes Aloyco valves, gives compositions and descriptions of wide range of alloys in which they are available, application data for handling nearly 400 corrosive solutions, and pictures valves in actual use in various process industries. 54 pages, two colors, 8 1/2" x 11". Alloy Steel Products Co.

☐ **56. AIR SEPARATION**—Bulletin 147 describes the Aridifier designed for removal of contamination from compressed air lines. Illustrations show installations where they are said to be removing 92% or better of all water, dirt, oil and scale. Logan Engineering Co.

☐ **57. SURFACE TEMPERATURES**—Bulletin 4257 gives complete data on all models of the Alnor Pyrocon for surface temperature readings. Illinois Testing Laboratories.

☐ **58. CENTRALIZED LUBRICATION**—"Studies in Centralized Lubrication" presents case histories of Farval Centralized Lubricating System installations, which are said to save money, labor, lubricant and production time. The Farval Corporation.

☐ **59. STRAINERS**—Bulletin 465 describes Self-Cleaning Strainers for Steam, Air, Gas or Liquid Service, illustrating installations for protection of regulators, valves, traps and process equipment as well as steam, air and gas lines. Leslie Co.

☐ **60. AIR POWER**—Use of "Controlled Air" power in replacing repetitive manual operations in wide range of processes, shows specific applications said to result in production increases ranging up to as high as 600%. The Bellows Co.

☐ **61. HEATED OR FORGED Parts Cleaning**—"Cleaning Problems Solved" in the heat treating and forging industry is subject of bulletin describing use of Wheelabrator Equipment "in terms of better cleaning at lower cost." 20 pages, well illustrated. American Wheelabrator and Equipment Corp.

☐ **62. RIGIDIZED METALS**—Patented method of processing metals by which strength and rigidity of metal are increased, attractive surface patterns are obtained, and use values improved, is sub-

(Please turn to page 20)

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(Continued from page 19)

ject of 12-page bulletin. Rigidized metals are used for wide range of products from oil pans to radio grilles, kick plates, panels, cabinets, pans, flooring, etc. Rigid-  
Tex Corporation.

☐ 63. **SCRAP CUTTER**—Bulletin describes Model D-611 scrap cutter, a compact, ram-driven unit which can be used on almost any punch press. Haller Machine & Mfg.

☐ 64. **STEEL STRAPPING**—Stanley Steel Stamping System is title of 16-page bulletin describing strapping, seals, tools, equipment and accessories, the Stanley car banding system, nailed on strapping, corrugated fasteners, etc. The Stanley Works, Steel Strapping Divn.

☐ 65. **PALLET EXCHANGE**—The Lawrence universal pallet, (standard 4-way pallet), and the Lawrence system of interchangeability between Exchange members, are described in bulletin issued by Lawrence Pallet Exchange Divn., Lawrence Universal Pallet Corp.

☐ 66. **CONVEYORS**—Catalog No. 75 illustrates and describes numerous stationary and portable conveyors for handling coal, abrasive materials, bales, sacks, cartons, etc., drag conveyors and special conveyors. Trowbridge Conveyor Co.

☐ 67. **MATERIALS HANDLING**—The Clark lift jack system of materials handling employing lift jacks and semi live skids and bins is described in four-page circular. All-Steel Welded Truck Co.

☐ 68. **MATERIALS HANDLING**—Mobilift fork lift, rated at 2000 lbs. on 15-inch load center, 32" wide, wheel base 45", roller chain lift—speed 45 ft. per minute, standard masts lifting to height of 68 or 108 inches, equipped with two-cylinder air cooled gas engine which develops 12 hp at normal operating speed, is described in new bulletin. Mobilift Divn., Vaughan Motor Co.

☐ 69. **MATERIALS HANDLING**—Heavy duty lift trucks, capacities ranging from 5 to 9 tons, are described in Bulletin HT 25. Standard lifting height 10 ft.; adjustable forks optional; power plants, heavy duty 4 cylinder and 6 cylinder industrial type engines. Machines may be used indoors or out. W. F. Hebard & Co.

☐ 70. **ALL-STEEL CONVEYOR**—All-steel conveyor is constructed in standard 5-ft. sections which can be added to or removed in from one to two hours time. Belt "links" are made of 18 gauge steel, cadmium plated; baffles may be attached for incline angles over 14°. Conveyor belt furnishes a flat, steel working surface with no open spaces between links and a positive non-slip drive. Steel-Parts Manufacturing Co.

☐ 71. **FLOW METERS**—Catalog section 25-E describes Flowrator instruments for measuring flow rate of liquids and gases. Numerous new accessories are shown including a horizontal line adapter. Details of front and rear panel mounting, rear lighting, steam heating coils, and alarm devices are also given. Fischer & Porter.

☐ 72. **WORK HOLDER**—Bulletin describes the air-powered Vi-Speed, which is characterized as a high production tool, providing positive, fast, continuous, regulated grip, with deep jaws of design and movement patterned after standard machinists' vises; jaw pressures 0 to 3½ tons, holding delicate work without injury, or heavy pieces for chipping, etc. May be installed vertically. Machine will crimp, bend, drive, bead, form, rivet, etc. Van Products Co.

☐ 73. **COMMUNICATION EQUIPMENT**—Booklet B-3610 covers parts and materials for radio transmitters, receivers, radar, telephone apparatus, electronic heating sets, and electronic control; 44 pages; also discusses Hipersil cores and other metals and alloys, Micarta industrial plastic, and insulating materials. Westinghouse Electric Corp.

☐ 74. **BATTERY CHARGER**—Bulletin 210 describes single circuit battery charger, which is fully automatic. The Electric Products Co.

☐ 75. **CONDENSATION RETURN Units**—Bulletin CR-1, 24 pages, gives detailed information on Condensation Return Units and Boiler Feed Pumps. It is termed a "text book" on these Deming products. The Deming Co.

☐ 76. **PAYROLL TIMEKEEPING**—The Cincinnati FP 800 Recorder, electric printing is termed "a method" for eliminating all hand settings and manual operations for registering workers, and at the same time reduces and simplifies routine figuring operations for the payroll auditor, short-circuiting at many spots the opportunity for human error. Bulletin describes it in detail. Cincinnati Time Recorder Co.

☐ 77. **RUBBER GLOVES**—Catalog Section 9035 describes acid and industrial rubber gloves, which are made by the Anode process directly from liquid latex. Each glove in line is described—size, length and thickness listed. Section also covers plastic treated and plastic sheet type industrial aprons. B. F. Goodrich Co.

☐ 78. **CIRCUIT BREAKER**—Circuit Breaker of moderate capacity for indoor service is described in bulletin 71B6179B. It is of the oil-tight, enclosed mechanism type with all three poles in one tank, and is capable of wide application to station, substation and industrial service. Breakers are available for manual and remote control operation. Allis-Chalmers Mfg. Co.

☐ 79. **COMPRESSORS**—Bulletin H-620-B26 describes Worthington Air King compressors bare, base mounted and tank mounted. It gives capacities, ratings, specifications and dimensions. Worthington Pump & Machinery Corp.

☐ 80. **CLAMP KITS**—Bulletin describes Clamp-Master kit for clamping, splicing tying, mending and banding high or low pressure hose, splits or breaks in pipes, posts, ladder rails, shovel handles and other similar items; splicing cables, tying conduit to pipe lines, etc. Punc-Lok Co.

☐ 81. **END MILLS**—Catalog of 16 pages describes Hi-Helix end mills, both single and double-end types of 18-41 high speed steel. Mills are specially heated-treated for toughness without sacrificing cutting ability. Morse Twist Drill & Machine Co.

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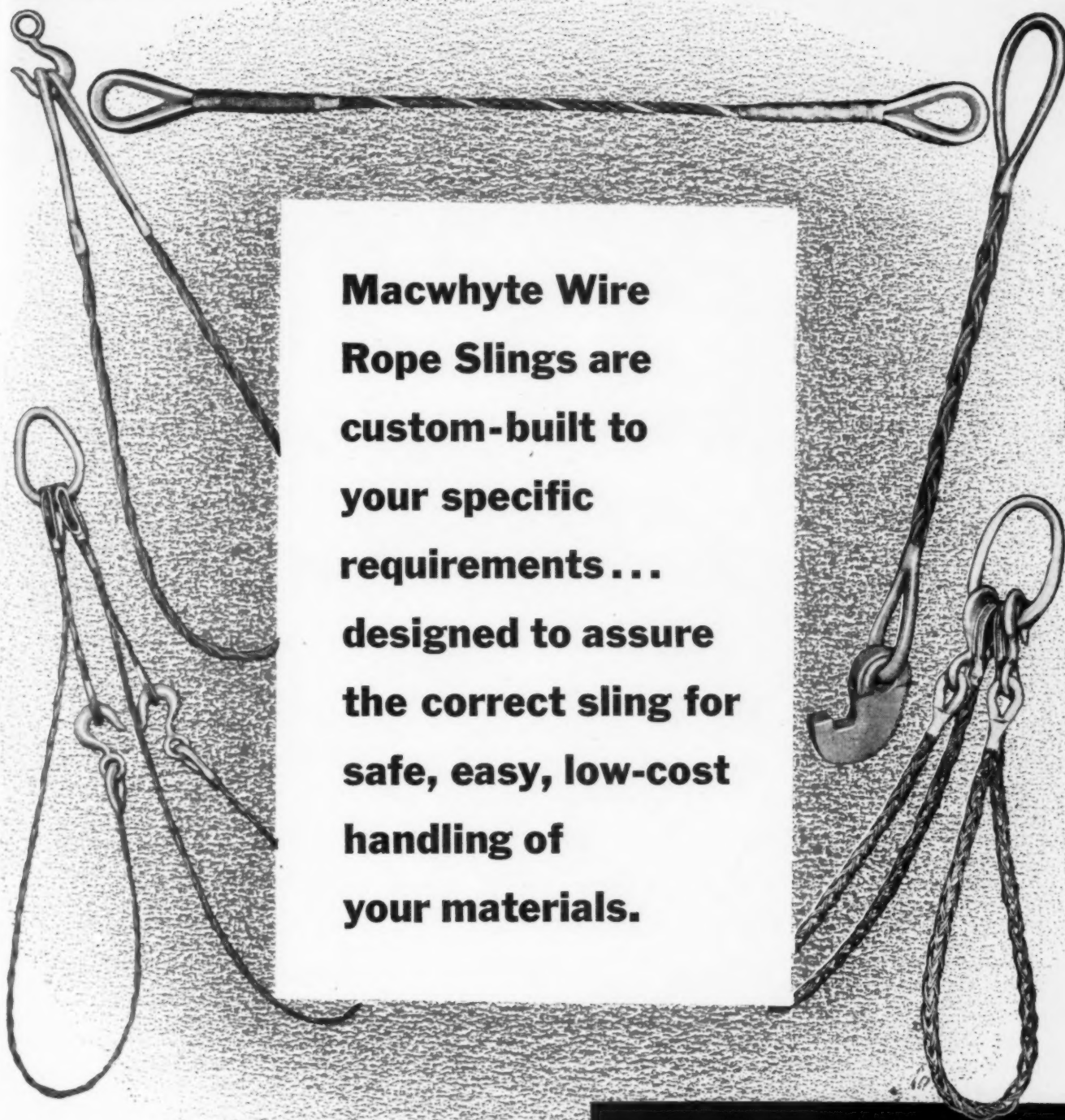
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# How Fast Can You Clean A Steel Pop Bottle?



Unretouched photograph  
courtesy Spacarb, Inc.

Used in coin-operated soda dispensers, these carbonating cylinders are made of stainless steel tubing. The darker of the two has been blackened by welding and silver soldering during fabrication.

Cleaning this cylinder, especially the inside, is a tough, tedious job—unless you use a pickling solution. Dozens of solutions were tried, however, without success—etching reaction made the tube surface unacceptable to Health authorities.

At the suggestion of Frasse, another solution was tried—with the result shown in the picture. Entirely satisfactory in surface finish, the tube is now cleaned at a saving of one hour and fifty minutes per unit.

Frasse makes no pickling solutions (although we'll send details for making this one on request)—but if you use tubing, and like qualified engineering service in its application, you'll find Frasse a good source to standardize on. Alloy, stainless and straight carbon inventories in a wide range of sizes and types for every commercial use. Call us.

*Peter A. Frasse and Co., Inc., 17 Grand Street, New York 13, N. Y. (Walker 5-2200) • 3911 Wissahickon Avenue, Philadelphia 29, Pa. (Radcliff 5-7100) 50 Exchange Street, Buffalo 3, N. Y. (Washington 2000) • Jersey City • Syracuse • Hartford • Rochester Baltimore*

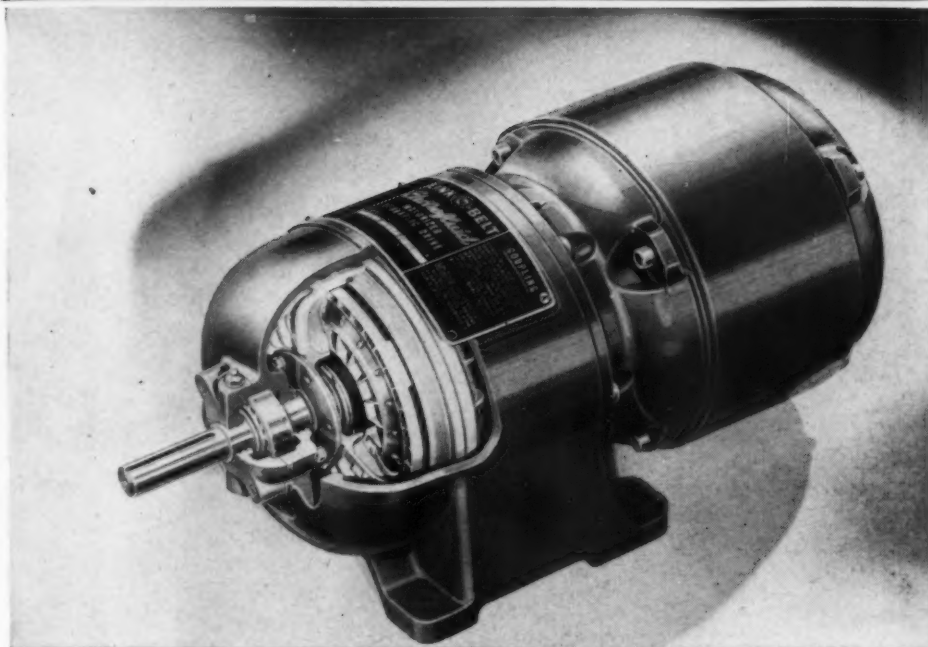
# FRASSE

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The ELECTROFLUID Drive combines with virtually all types of Link-Belt constant and variable speed reduction gear units and chain drives to afford shock-proof, efficient, economical transmission of power, embodying important features in starting and overload protection. Three principal advantages are:

- (a) It permits the use of a smaller motor than otherwise might be required—improves power factor and overall efficiency.
- (b) It prevents damage to costly power-driven equipment and motor.
- (c) It provides a smooth transmission of power, eliminating shocks which could damage material in process.

Ask for Book 2085-A giving full details and application suggestions.

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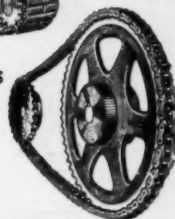
Link-Belt Power Transmission Machinery meets the exacting requirements of all industry.

Silverstreak Silent Chain Drives

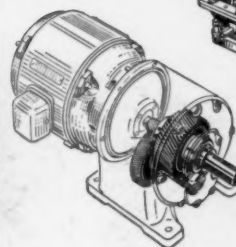
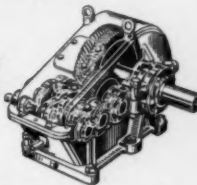
Silverlink Roller Chain Drives



V-Belt Drives

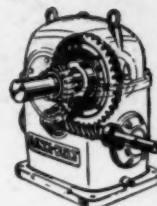


Herringbone Gear Speed Reducers



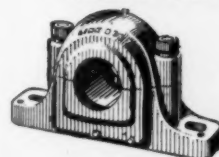
Motorized Helical Gear Speed Reducers

Worm Gear Speed Reducers



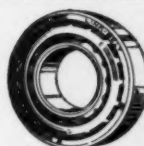
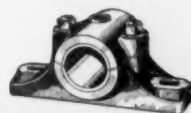
PIV Gear Speed Changers

Ball Bearing Mounted Units



Roller Bearing Mounted Units

Unmounted Ball and Roller Bearings



Babbitted Bearings

# LINK-BELT

## *Power Transmission Machinery*

**"WOW!...  
400 PIECES AN HOUR  
WITH THIS  
SILVER STREAK BELT..."**



**...best I was able to do  
before was 200"**

• MANUFACTURERS EVERYWHERE are discovering that with Silver Streak (insulated) and Jewelox (aluminum oxide) Belts they can double and treble their output. At the same time they cut abrasive costs to a quarter what they were with older methods!

And both of these belts are finished by the Velvet Joint process. They lie smooth, never jump or bump under the work... both have the quality features that mark *all* Jewel Abrasives.

Try a belt! See for yourself! Immediate delivery on most sizes. Phone your jobber or write to Abrasive Products, Inc., 523 Pearl Street, South Braintree, Massachusetts.



***Abrasive Products, Inc.***

SOUTH BRAINTREE 25, MASSACHUSETTS - MAKERS OF JEWEL COATED ABRASIVES



Your plant has danger spots you may be neglecting . . . where corrosion is continuously at work doing expensive damage to structures and equipment.

Guard *all* your plant from moisture, fumes, smoke and weather with Flintkote **HYDRALT**\* Protective Coatings.

*Hydralt* is Flintkote's registered name for asphalt in its most modern form . . . a stable, mineral-colloid emulsion. And on metal or masonry, anywhere in your plant, Hydralt Protective Coatings give you important *acknowledged* advantages over cutback asphalts or hot asphalt coatings.

You can apply *Hydralt* Protective Coatings *cold* with trowel, brush or spray, depending on requirements and the type used. Odorless and non-toxic, easy and economical to use, Hydralt

Protective Coatings will not crack, craze or alligator under exposure. And they will not flow under heat or become brittle when cold.

Durable? Indeed they are. Tests prove that Hydralt Protective Coatings will outlast any other form of bituminous coating exposed to weather.

Check up. See how many places in your plant need protection. Then . . . for full details on how you can protect them . . . write for our latest folder on *Hydralt Protective Coatings*.

**THE FLINTKOTE COMPANY**  
INDUSTRIAL PRODUCTS DIVISION  
30 Rockefeller Plaza, New York 20, N. Y.

ATLANTA • BOSTON • CHICAGO HEIGHTS  
DETROIT • LOS ANGELES • NEW ORLEANS  
WASHINGTON • TORONTO • MONTREAL

\*Reg. U. S. Pat. Off.

**FLINTKOTE**  
*Products for Industry*



**BRIGHTEN UP...**  
Use Flintkote  
**ALUMINUM PAINT**

Flintkote Aluminum Paint is the answer to the problem of adequate protection where light reflectivity is a factor.



For best protective results, use Flintkote Aluminum Paint over the proper coating of Hydralt Protective Coating.

Flintkote Aluminum Paint (asphalt base) is compatible with bituminous coatings. When used over asphalt, it will not cause bleeding, a common characteristic with oil base paints.



**"BE SURE TO  
SEND US  
CIRCLE  BOLTS"**



● It's smart business to specify Circle  Bolts and Nuts when ordering. In that way you can be sure that the fasteners you buy are of uniform size and strength... qualities that enable your workmen to get jobs done faster and better at lower cost to you. That's why so many buyers always make it a practice to order Circle  Products by name.



**BUFFALO BOLT COMPANY**

**NORTH TONAWANDA, N. Y. • SALES OFFICES IN PRINCIPAL CITIES**

**Export Sales Office: Buffalo International Corp., 50 Church Street, New York City**



## Package protection for every product you ship

Safety in shipment . . . that's what you want from an interior packaging material. And that's why each product you ship should be protected against damage with KIMPAK\* creped wadding. For KIMPAK has every quality demanded by Absorbent Packaging, Flotation Packaging, Surface Protection, or Blocking and Bracing — the four basic methods of interior packaging.

KIMPAK is downy-soft, clean, and muss-free. It's strong, flexible, and highly resilient. Supplied in either liquid absorbent or liquid

repellent specifications and in a variety of types, thicknesses, and backings to suit your particular interior packaging need.

Find out for yourself how KIMPAK safeguards your product . . . safeguards your profit. Phone your local distributor today. Or write Kimberly-Clark Corporation, Creped Wadding Division, Neenah, Wis.

*We are producing all the KIMPAK creped wadding we possibly can, but due to the great demand, your distributor may have some difficulty in supplying you immediately.*

# Kimpak

REG. U.S. PAT. OFF. & FOREIGN COUNTRIES


### CREPED WADDING

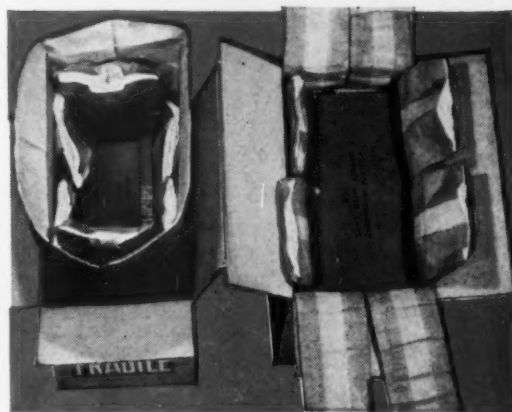
\*KIMPAK (trademark) means Kimberly-Clark creped wadding



**SURFACE PROTECTION — Radio**  
Photo courtesy Stromberg-Carlson Co.



**ABSORBENT PACKAGING — Drugs**  
Photo courtesy Angier Chemical Co.



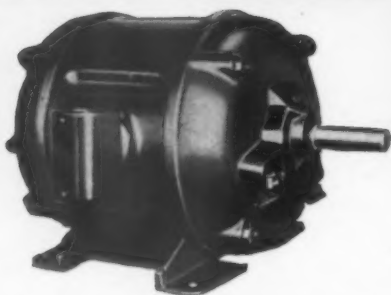
**FLOTATION PACKAGING — T-1 Bombsight**  
Photo courtesy AC Spark Plug Div., General Motors Corp.



**BLOCKING AND BRACING — Model Locomotive**  
Photo courtesy Varney Scale Models Co.

# WAGNER *Quality* MOTORS

## help Industry maintain Peak Production



Regardless of what your motor requirements may be—large motors...small motors... Wagner makes them all. The motor illustrated is typical of the Wagner line of polyphase and single-phase motors. Choose a Wagner motor for your next installation.

Whistles blow, workers stop, and new shifts come on to the job, but motors driving production equipment must whirl merrily on around the clock to help industry maintain peak production. And peak production can be maintained only if motors stay on the job without breakdowns. Dependable motor performance is a tough assignment—but not so tough for Wagner Motors. They have the stamina to stand up because they are made of highest quality materials and are

engineered to do the job efficiently. If you want motors that *will* do the job, whether large or small, contact any of our twenty-nine branches. They are located in principal cities and manned by trained field engineers who will help you solve your motor problems. A letter addressed to Wagner Electric Corporation, 6360 Plymouth Avenue, St. Louis 14, Mo., will bring Bulletins on the complete line of Wagner Quality Motors.

**Wagner**  
Electric Corporation  
EST. **WE** 1891

*Consult Wagner Engineers on all Electric Motor Problems*



BRIDGE BRAKES • POWER AND DISTRIBUTION TRANSFORMERS • MOTORS • UNIT SUBSTATIONS

**ELECTRICAL AND AUTOMOTIVE PRODUCTS**



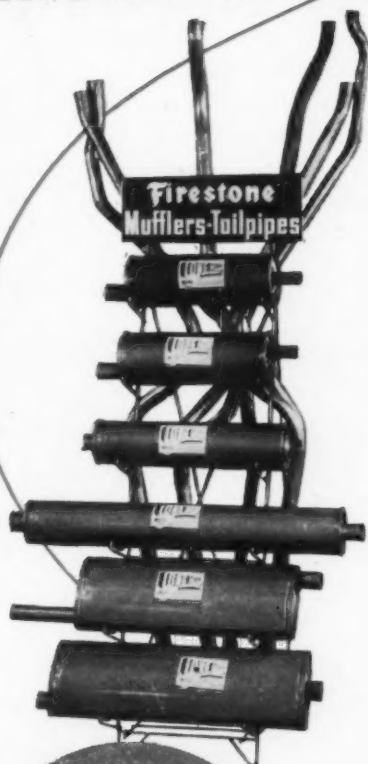
These wire displays are typical of products made by Coleman-Pettersen Corporation, Cleveland, Ohio, who, like other manufacturers of quality wire products specify U.S.S. American Manufacturers Wire.



If you  
make it of

# WIRE

*...make it of the best!*



THERE are ample reasons why more and more manufacturers of wire products are specifying U.S.S. American Manufacturers Wire.

U.S.S. American is good wire. It is easily fabricated . . . uniform in finish . . . free from imperfections. And products well-made with American Manufacturers Wire usually enjoy repeat business rather than "one-and-done" sales.

Our specialists are always at your service to help you select for your use, from among our 400 different types of wire, the one best suited to your purpose.

For a free consultation, write to American Steel & Wire Company, 412 Rockefeller Building, Cleveland 13, Ohio.

**AMERICAN STEEL & WIRE COMPANY**

*Cleveland, Chicago and New York*

**COLUMBIA STEEL COMPANY**

*San Francisco*

*Tennessee Coal, Iron & Railroad Company, Birmingham, Southern Distributors*

*United States Steel Export Company, New York*

**UNITED STATES STEEL**

**U.S.S. AMERICAN MANUFACTURERS WIRE**



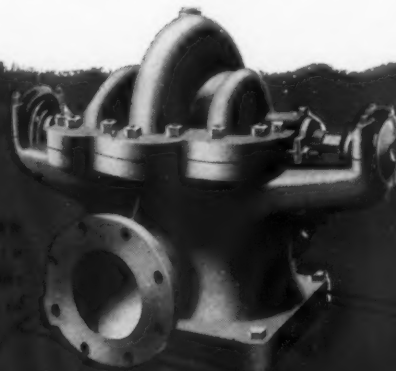
**Famous Westco Turbine-Type Pumps** with renewable lobes for high-speed, low-speed service.



**Fairbanks-Morse-Pomona Vertical Turbine Pumps:** One or dual impellers; oil or water lubricated.



**Fairbanks-Morse Centrifugal Pumps:** Single and multistage types for broader range of pumping service.



**Fairbanks-Morse Submersible Pumps:** for low-head, low capacity work in all industries.

## Can ANYONE sell a pump?

No, just anyone can't sell a pump —properly.

It takes a lot of adroit engineering to figure the right pump for any specific job. It takes a broad background of experience to enable a man to be sure he's selling you a pump that will make you a long-term friend and customer.

This engineering ability and experience are yours when you buy from a Fairbanks-Morse-Pomona dealer.

He knows pumps. He has the broadest line to choose from; he's backed by all the engineering and production resources of Fairbanks-Morse. He can offer you skilled, impartial advice—he can sell you the pumping savings and satisfaction you're after.

# FAIRBANKS-MORSE

**A name worth remembering**

# How NI-ROD saved a headache...

*and brought a saving*

## BEFORE:

Parts of burner assembly for Luxaire gas-fired gravity furnace made by C. A. Olsen Mfg. Co., Elyria, Ohio.



## AFTER:

Completed burner showing parts welded in place by Ni-Rod. Note smoothness of welds. Steel disc was joined to mouth of cast iron throat inlet by 4 tack welds 90 degrees apart.



**I**N ASSEMBLING the burners for their new "Luxaire" domestic gas furnaces, the C. A. Olsen Mfg. Co., of Elyria, Ohio, ran into trouble.

Ordinary electrodes wouldn't do the job of welding the cast iron burner heads to the burner throats. Welds cracked... parts failed.

After experimenting with many different electrodes, they finally discovered their solution... in Ni-Rod.\*

Ni-Rod, they found, united the two cast iron parts with strong, sound, crack-free welds.

*It also welds cast iron to steel.*

So, the Olsen Company had no trouble in welding the slotted steel discs to the cast iron throat inlets... in the same operation.

And, while improving their product, Ni-Rod also brought money- and labor-saving advantages. For example, Ni-Rod goes on so smoothly that extra finishing operations are unnecessary. The whole job is completed in a little more than a minute... without preheating... using only half an 1/8" electrode.

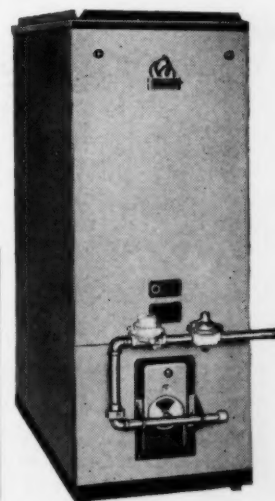
Today, the Olsen Company reports that over 25,000 units have been welded with Ni-Rod and are

giving A-1 service.

Find out more about Ni-Rod... how it can speed your production... save extra operations... save extra cost. Available in 3/32", 1/8", 5/32", and 3/16" diameters. Order a 5-lb. package from your nearest distributor listed below.

**THE INTERNATIONAL NICKEL COMPANY, INC.**  
67 Wall Street, New York 5, N. Y. \*Reg. U.S. Pat. Off.

"Luxaire" Series  
G Gas Fired  
Domestic Grav-  
ity Furnace  
Size: 5 ft. x  
2 ft. x 3 ft.  
Output: 60,000  
to 90,000 AGA  
B.T.U.



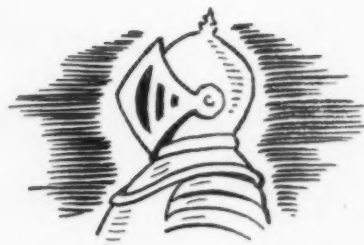
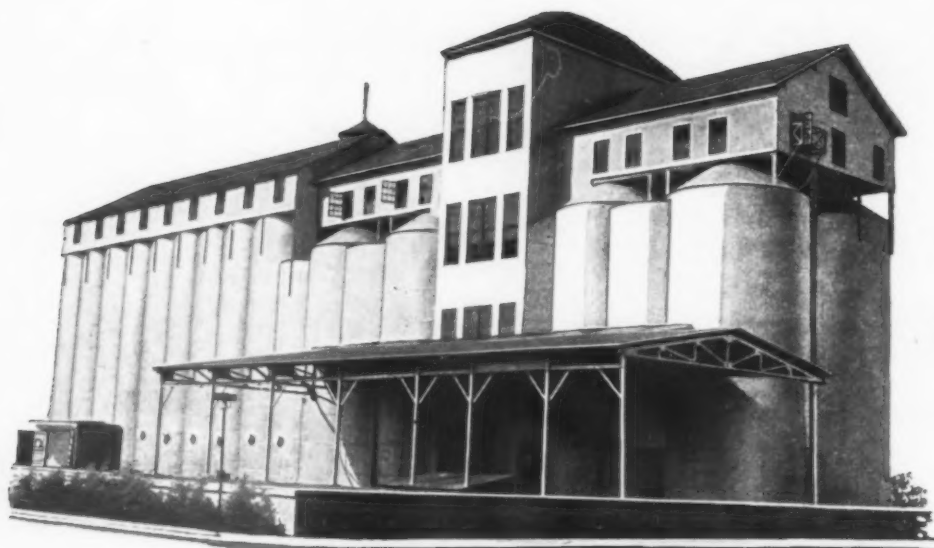
**SEND FOR  
INSTRUCTION  
BOOKLET**

### Get NI-ROD from:

WHITEHEAD METAL PRODUCTS  
COMPANY, INC.  
WILLIAMS AND COMPANY  
STEEL SALES CORP.  
HENDRIE & BOLTHOFF MFG. &  
SUPPLY CO.  
PACIFIC METALS COMPANY, LTD.  
J. M. TULL METAL & SUPPLY CO.

EAGLE METALS CO.  
METAL GOODS CORPORATION  
ROBERT W. BARTRAM  
ALLOY METAL SALES, LTD.  
WILKINSON COMPANY LTD.  
METAL & THERMIT CORPORATION  
HOLLUP CORPORATION  
NATIONAL CYLINDER GAS  
COMPANY





# Sheathed in "Shining Armor"

## ..... Protected Against Rust, Corrosion and the Sun's Damaging Rays

Throughout the world, more and more refineries, grain mills, tanks, trucks, railway cars and industrial plants of all types are appearing in silver-bright, metal-like "armor coats" of PERMITE Aluminum Paint.

Industry's preference for PERMITE Ready-Mixed Aluminum Paints is based, first of all, on PERMITE's recognized maximum protection against moisture, smoke, fumes, acids and other destructive agents. Another important factor is PERMITE's high reflectivity of the sun's rays, reducing interior heat in tanks, storage buildings, etc. Liquid losses through evaporation are minimized, cold temperatures maintained, perishable goods preserved.

PERMITE'S reflective qualities also make building interiors brighter and promote better working conditions.

PERMITE Aluminum Paints are quality-plus. They're made of 99+% pure aluminum pigment scientifically balanced with PERMITE's exclusive, specially formulated vehicle. **The vehicle makes the difference!**

PERMITE Paints are completely ready-mixed, saving time and labor. See your Distributor, or write us.

**ALUMINUM INDUSTRIES, Inc.**

CINCINNATI 25, OHIO

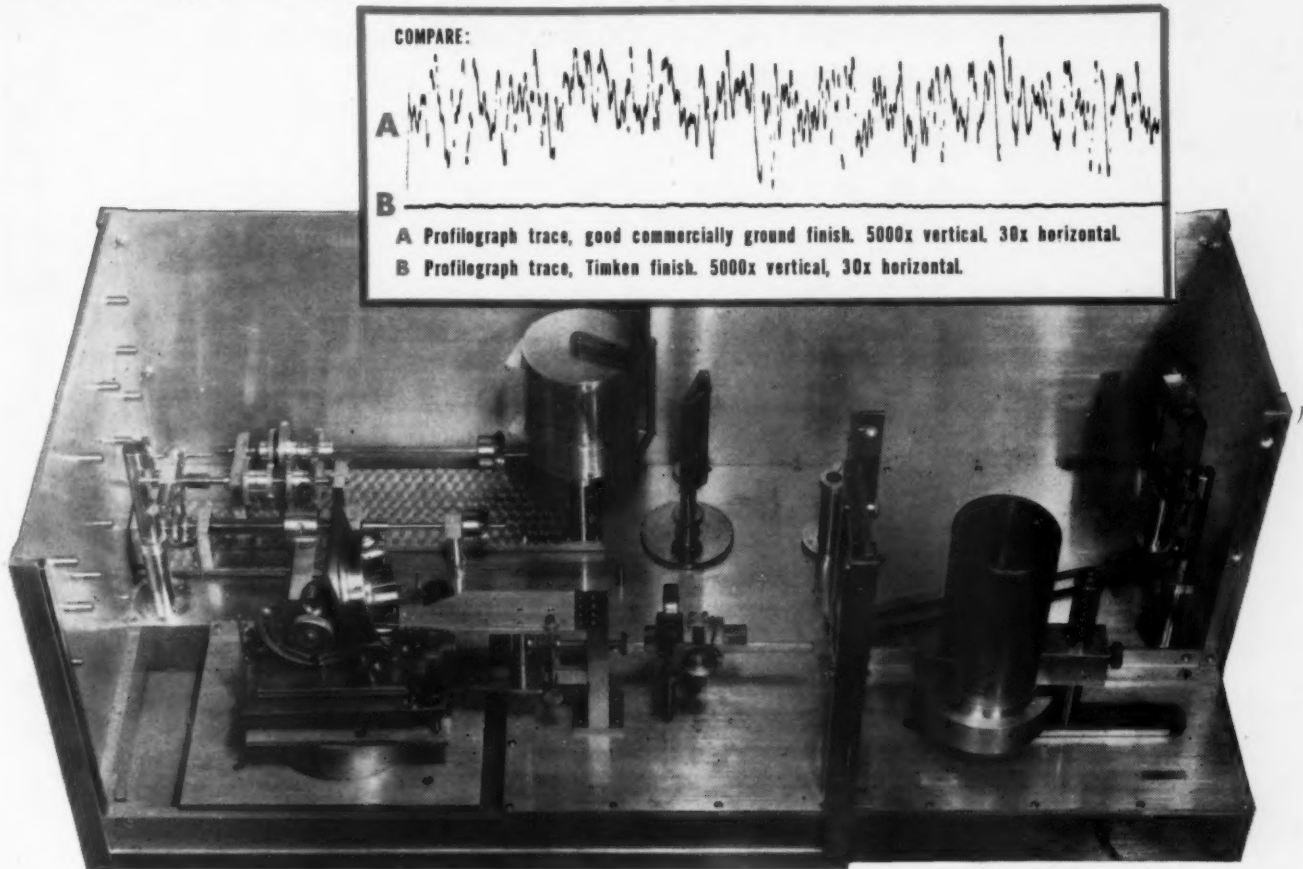
THE ORIGINATOR OF READY-MIXED ALUMINUM PAINTS



**THE VEHICLE  
MAKES THE DIFFERENCE!**

# PERMITE READY MIXED ALUMINUM PAINTS

*Timken bearings are preferred by your engineers . . . here's one of the reasons why:*



## Answers the question— "How rough is smooth?"

ONE of the reasons Timken tapered roller bearings perform with such frictionless, wear-free ease is the amazingly smooth surface finish on the rolls and races—the finest known to modern bearing science.

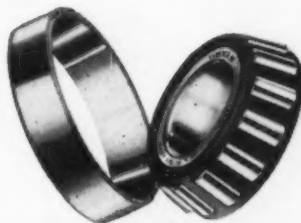
Now, when you talk about finishes like this, you're talking about surface irregularities of only a few millionths of an inch—irregularities which are impossible to detect by any ordinary means. So, when Timken first began to develop this finish, one of the biggest obstacles was the absence of an accurate method of measuring the roughness of an apparently smooth surface.

The profilograph pictured above was the answer. Developed by Tim-

ken in 1928 and steadily improved since then, the profilograph determines surface irregularities to within one-millionth of an inch. Equipped with this measuring stick, Timken engineers were able to develop new finishing methods and machines, which have resulted in the microscopic surface accuracy of the Timken bearings you use today.

Every factor in the efficiency of a bearing is approached at Timken

in this same scientific manner. For example, Timken makes its own steel to assure constant quality. And Timken is the acknowledged leader in: 1. advanced design; 2. precision manufacture; 3. rigid quality control; 4. special analysis steels. No wonder you can always be sure of uniformly top quality and performance in the Timken bearings you use. The Timken Roller Bearing Company, Canton 6, Ohio.



**TIMKEN**  
TRADE-MARK REG. U. S. PAT. OFF.  
**TAPERED  
ROLLER BEARINGS**

NOT JUST A BALL NOT JUST A ROLLER THE TIMKEN TAPERED ROLLER BEARING TAKES RADIAL AND THRUST LOADS OR ANY COMBINATION

## A BUYING GUIDE FOR ABRASIVES

### POINT No. 7

## SATISFIED USERS



When satisfied customers are the yardstick by which a concern is evaluated, The Carborundum Company measures up well. During the many years it has supplied abrasive tools to industry... the opinions, needs and viewpoints of those it serves have been deeply respected. The results of this policy are reflected in the high regard in which the name CARBORUNDUM is held by users of abrasives.

There's a certain feeling of satisfaction in doing business with a concern on this high level of helpful cooperation. It is often expressed in the stated preference for services and abrasive products by CARBORUNDUM. The Carborundum Company, Niagara Falls, N. Y.

A Good Rule for Good Grinding... CALL IN

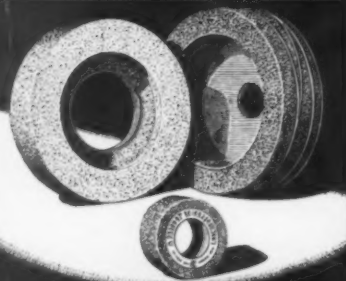
# CARBORUNDUM

TRADE MARK

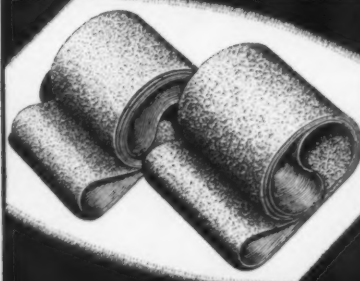
- BONDED ABRASIVES
- COATED ABRASIVES
- ABRASIVE GRAINS AND FINISHING COMPOUNDS



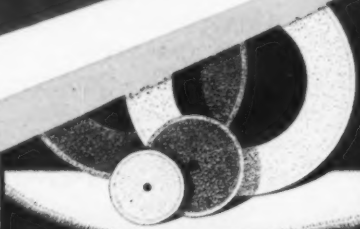
"Carborundum" is a registered trademark which indicates manufacture by The Carborundum Company



Cool-cutting green grit wheels for cemented carbide.



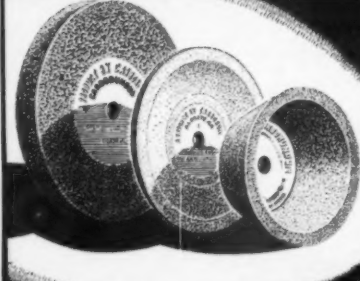
A coated abrasive for every sanding and finishing condition.



Specialized wheels by CARBORUNDUM for thread grinding.



Diamond wheels to meet stiffer technical needs.



All standard shapes are supplied in grinding wheels by CARBORUNDUM.





Artist — Richard Barnes, native of Iowa

IOWA — annual purchases: \$1¾ billion — mostly packaged.

CONTAINER CORPORATION OF AMERICA



# "Come Hell or High Water..."



## WISSCO BELTS ARE BUILT TO TAKE IT

Whether your processing operations require conveyor belts that stand up against the terrific heat of annealing or brazing furnaces, or under the punishment of chemical or wet processing, a Wissco Metal Conveyor Belt will do the job efficiently and economically.

The open mesh construction of Wissco Belts permits even heat distribution—makes them the accepted standard for heat treatment of metals, glass and ceramic ware and for baking and dehydrating of foods. Open mesh also permits the free drainage necessary for degreasing, quenching, washing, blanching or frying.

Each Wissco Belt has in it all the skill and experience of America's oldest producer. For 50 years Wickwire has pioneered in belt development and design. Wissco engineers are constantly solving problems for manufacturers—creating "tailor-made" belts to give long service under corrosion, abrasion and other destructive forces.

If you have a conveyor belt problem, we will be happy to cooperate in its solution. Send for our illustrated catalog showing types and advantages of numerous conveyor belt constructions.

# WISSCO

## METAL CONVEYOR BELTS

A PRODUCT OF WICKWIRE SPENCER STEEL DIVISION OF THE COLORADO FUEL AND IRON CORPORATION

Belt Sales Office and Plant—56 Sterling St., Clinton, Mass.

• Executive Office—500 Fifth Avenue, New York 18, N. Y.

Sales Offices—Boston, Buffalo, Chattanooga, Chicago, Denver. Pacific Coast—The California Wire Cloth Corp., Oakland 6, Calif.



# EATON PERMANENT MOLD GRAY IRON CASTINGS

*Find Many Applications  
in Air Conditioning*



Air conditioning, like refrigeration, demands castings which are capable of holding liquids under pressure without leakage. The dense non-porous structure of Eaton Permanent Mold Gray Iron Castings makes them ideally suited to such critical applications as cylinder blocks, pump bodies, valve bodies, and cylinder heads. Other desirable characteristics include free machinability, ability to take a high surface finish, freedom from growth and distortion after machining, and freedom from segregation. Millions of Eaton Permanent Mold Gray Iron Castings are used annually in the refrigeration, air conditioning, and domestic appliance industries for valve plates, crankshafts, connecting rods, sheaves, gear blanks, vee-belt pulleys, and many others.

Eaton Foundry Division engineers will be glad to discuss the application of Eaton Permanent Mold Gray Iron Castings to your product. Send for your copy of the illustrated booklet, "*A Quick Picture of the Eaton Permanent Mold Process for producing Gray Iron Castings.*"

© 1947. EATON MFG. CO.

THE EATON PERMANENT MOLD MACHINE IS A SYMBOL  
OF THE QUALITY OF GRAY IRON CASTINGS PRODUCED  
BY THE PERMANENT MOLD PROCESS.

# EATON

MANUFACTURING COMPANY

FOUNDRY DIVISION

9771 French Road

Detroit 13, Michigan



# Improvising on **SPRING MUSIC WIRE**



Sharp with the  
"Flats," too!

For flat springs and small stamped parts, Wallace Barnes also processes in its own mill many tempers and hardnesses of spring steel to meet requirements of intricacy or endurance.

When spring "specs" say: "Make it of music wire"—we could call it a day. Music wire is a well-known standard product and lots of springs are made of it. But with a particular eye to production and performance balance, we use several kinds of music wire, each keyed to special uses. By broadening the field of "standards," Wallace Barnes provides additional possibilities for quality control and economy in springmaking.

## Wallace Barnes SPRINGS


SMALL STAMPINGS • WIRE FORMS • HAIRSPRINGS • COLD ROLLED SPRING STEEL

WALLACE BARNES COMPANY  
BRISTOL, CONN.

DIVISION OF THE ASSOCIATED SPRING CORP.

AND IN CANADA, THE WALLACE BARNES CO., LTD., HAMILTON, ONTARIO

**From Elemental Fluorine . . .**



# SULFUR HEXAFLUORIDE

## — A General Chemical Research Development +

### SULFUR HEXAFLUORIDE

Formula:  $\text{SF}_6$

Molecular Weight: 146.06

Melting Point:  $-50.8^\circ\text{C}$

Sublimation Temperature:  $-63.8^\circ\text{C}$

Critical Temperature:  $45.6^\circ\text{C}$

Critical Pressure: 540 p.s.i.a.

Vapor Pressure:

Temp. ( $^\circ\text{C}$ )	Pressure (p.s.i.a.)
-80	5
-50	34
-20	102
+10	240
+40	481

In Sulfur Hexafluoride, General Chemical Research makes another important contribution to fluorine chemistry. This stable dielectric gas is the first commercial chemical produced from elemental fluorine to be offered Industry . . . and fore-runner of many similarly-made fluorine compounds awaiting introduction.

Sulfur Hexafluoride was discovered by Moissan and Lebeau in 1900 as the product of combustion of sulfur in fluorine. It has been found to be remarkably inert and to possess exceptional thermal stability. These characteristics,

together with its splendid electrical properties, have led to its present use as a gaseous dielectric in high-voltage equipment.

The physical data presented here may suggest other applications worthy of prompt investigation for your products and processes. For commercial quantities, experimental samples, or more detailed technical information, contact General Chemical Company, Research & Development Division, 40 Rector Street, New York 6, N. Y. Please use business letterhead when writing.

BASIC CHEMICALS



FOR AMERICAN INDUSTRY

## GENERAL CHEMICAL COMPANY

40 Rector Street, New York 6, N. Y.

Sales and Technical Service Offices Serving Industry from Coast to Coast

In Canada: The Nichols Chemical Company, Limited, Sun Life Building, Montreal, Quebec

Technical Information  
on FELT ... No. 1

# FELT WICKS

## RELIABLE, CONTROLLED LUBRICATION

Four Basic Wick-Feed Lubrication Systems Meet Diverse Requirements  
Design Is Simple, Cost Is Low, Reliability and Long Life Assured

Lubrication by means of felt wicks permits oil to be fed to bearings and other moving parts, automatically and without failure or interruption. Wicks permit extremely fine control of lubricant, from many drops to a small fraction of a drop per minute. Where actual consumption of oil is low, oil-impregnated felt makes possible the use of completely enclosed parts, such as sealed bearings, and is in fact essential to them. In such applications it can be expected that lubrication will be supplied throughout the life of the part, and that no attention will be required between major overhauls.

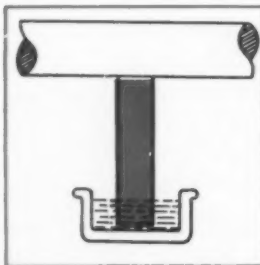
The cost of a felt wick is low, in fact infinitesimal compared with the cost of the machine or part whose performance it protects.

### TYPES OF WICK OILERS

There are four types of wick lubrication systems. Choice of any given type depends upon such factors as the lubrication needs of the moving part, accessibility, available space, operating and servicing conditions, and similar matters of design and use. The Engineering and Research Laboratories of the American Felt Company will gladly collaborate with you in working out the design of the most desirable type of system and in selecting the proper size and grade of wick.

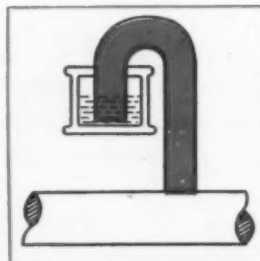
#### 1. BOTTOM WICK OILER

In this type, the felt wick is immersed in a reservoir of oil beneath the bearing, and through capillarity carries the oil upward to the point of lubrication. Maximum vertical wicking distance, about 6 inches. This is generally considered the most efficient system. Unused oil is returned to the reservoir, and no attention is required beyond occasional cleaning and replenishing of oil as required. An ideal system for apparatus such as motors, generators, and factory equipment.



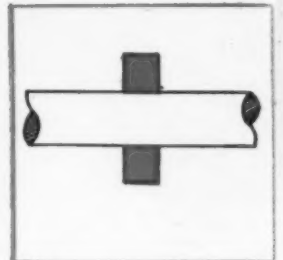
#### 2. SYPHON WICK OILER

Felt wicks of this type are widely used, particularly where oil is to be delivered uniformly and at a controlled rate to a remote friction point. In addition to other methods of control, the flow of lubricant can be increased by increasing the vertical wicking distance from the reservoir to the point of lubrication, taking advantage of gravity.



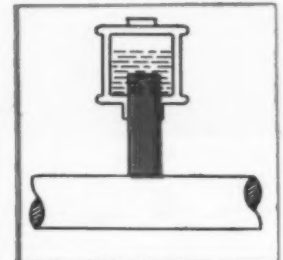
#### 3. ABSORBENT OR PAD FEED OILER

Here the lubricant is contained entirely within the felt, and is released automatically as required. This is the type often employed in sealed installations, though it may also be used in conjunction with a filler tube, the chief purpose of which is to act as a small reservoir. The oil absorption or storage capacity of felt is high. For example, SAE F-10 felt, recommended for pad oiling, will store oil of any viscosity to the extent of approximately 450 per cent of its own weight.



#### 4. TOP FEED OILER

The reservoir is above the lubrication point, and oil is supplied through a felt wick inserted in an outlet in the bottom. In this case, the wick acts as an obstruction to control the flow of oil. Frequently the wick is mechanically constricted to effect further control while taking advantage of storage capacity between constriction and delivery point. This insures uniform lubrication and provides a surplus reserve of oil in the event of an empty reservoir.



### SELECTION OF WICK FELTS

There are four types of felt recommended for wick lubricating systems. The physical characteristics of each are under complete control, and are standardized. As much care should be exercised in wick selection as in the choice of lubricants. The felt must have high absorption capacity and capillarity. Porosity must be controlled, filter action must be excellent, density, size, fibre quality and acid neutrality must be governed within close limits. Acid neutrality is necessary to avoid breaking down the oil or corroding metals. The wick must be highly cohesive, which requires medium to long fibres. Residual ash content must be low, to minimize glazing or scoring at the delivery point. All these requirements are thoroughly understood by American Felt Company engineers and production men. Manufacture, test and inspection methods have been developed over a long period of years, resulting in complete uniformity within the four grades, and reliable, predictable performance. The four grades are as follows:

No.	SAE Standard	Type of Wick or Lubricating System
7546	F-1	Round, Strip, Punched
7545	F-5	Strip, Washer, Absorbent Pad
51018	F-10	Absorbent Pad, Washer
51002	F-50	Ball Bearing Seal





Generator commutator end bearing lubricated with SAE 20 oil with a bottom wick oiler. A 3/16" diameter American Felt Co. Mdse 7546 wick with a wicking distance of approximately 1 inch is used for this critical lubricating job. With a shaft speed of 9000 RPM and a 200-hour oiling schedule these wicks always equal the life of the bearings, which are replaced after 100,000 miles or 2000 hours continuous operation.

Courtesy Delco-Remy Division

#### HOW SUPPLIED

Wick felts are furnished either in bulk, or ready-cut into wicks to your own specifications, round, square, strip, pad, punched, or special types to meet your needs. By use of precision cutting machines of modern design, American Felt Company wicks are customarily supplied with a dimensional accuracy of plus or minus .005 inch.

#### OTHER USES

Felt wicks can of course be used to carry or control a wide range of fluids, such as water, ink, solvents. Felt can also be impregnated with viscous or solid lubricants such as grease, glycerine, dispersions of micronized graphite, tallow, hydrogenated and sulphonated oils, silicone greases, and with various waxes, thus providing protection at points where loads and speeds are such that oil is not required.

#### SEND FOR DATA SHEET

The material in this advertisement has been condensed from American Felt Company Data Sheet No. 6, "Wicks and Lubrication." This eight page Data Sheet is the basic authority upon the subject. It contains full technical data, including formulae, charts and graphs, tables. From it any engineer can calculate wick performance and arrive at a design and specification that will meet the requirements of a given application. Write on your letterhead and a copy will be sent you. Along with it you may wish to receive a list of the 15 American Felt Company Data Sheets containing technical information on the various characteristics, types and applications of felt and felt products.

#### BASIC PRINCIPLES OF WICK LUBRICATION

**Wick-rise rate** or capillarity varies directly with wick density, inversely with oil viscosity.

**Wicking distance** likewise varies directly with wick density, inversely with oil viscosity.

**Oil feed or delivery rate** is governed by the absorption capacity of the wick, its capillarity, the cross sectional area of the wick, and the wicking distance.

**HENCE:** With syphon wicks, the greater the wicking distance, and the greater the cross sectional area, the greater the flow.

With bottom wicks, the shorter the wicking distance, and the greater the cross sectional area, the greater the flow. (Maximum recommended distance about 6 inches.)

With syphon, bottom, and pad wicks, flow can be reduced by mechanically compressing or restricting a section of the wick between the reservoir and point of delivery.

All factors involved in the design of a wick lubrication system have been scientifically studied by the American Felt Company, and are susceptible to accurate mathematical calculation. Felt is an engineering material, and its performance can be determined in advance with as much accuracy as that of any metal or other substance.

#### ENGINEERING USES OF FELT

Wicks  
Oil and Grease  
Retainers  
Dust Seals  
Gaskets  
Cushioning and Shock  
Absorbing

Filtering Fluids and Gases  
Packing  
Polishing  
Caulking  
Insulation  
Sound Absorption  
Vibration Isolation

Felt is an engineering material of great versatility. It can be made hard as a board, or soft as a kitten's ear, oil-conducting or oil-sealing, fire-proof, water repellent, or fungi resistant, white as snow or any color including black, and it can be cut, punched, turned, ground, pressed and moulded to shape.

# American Felt Company

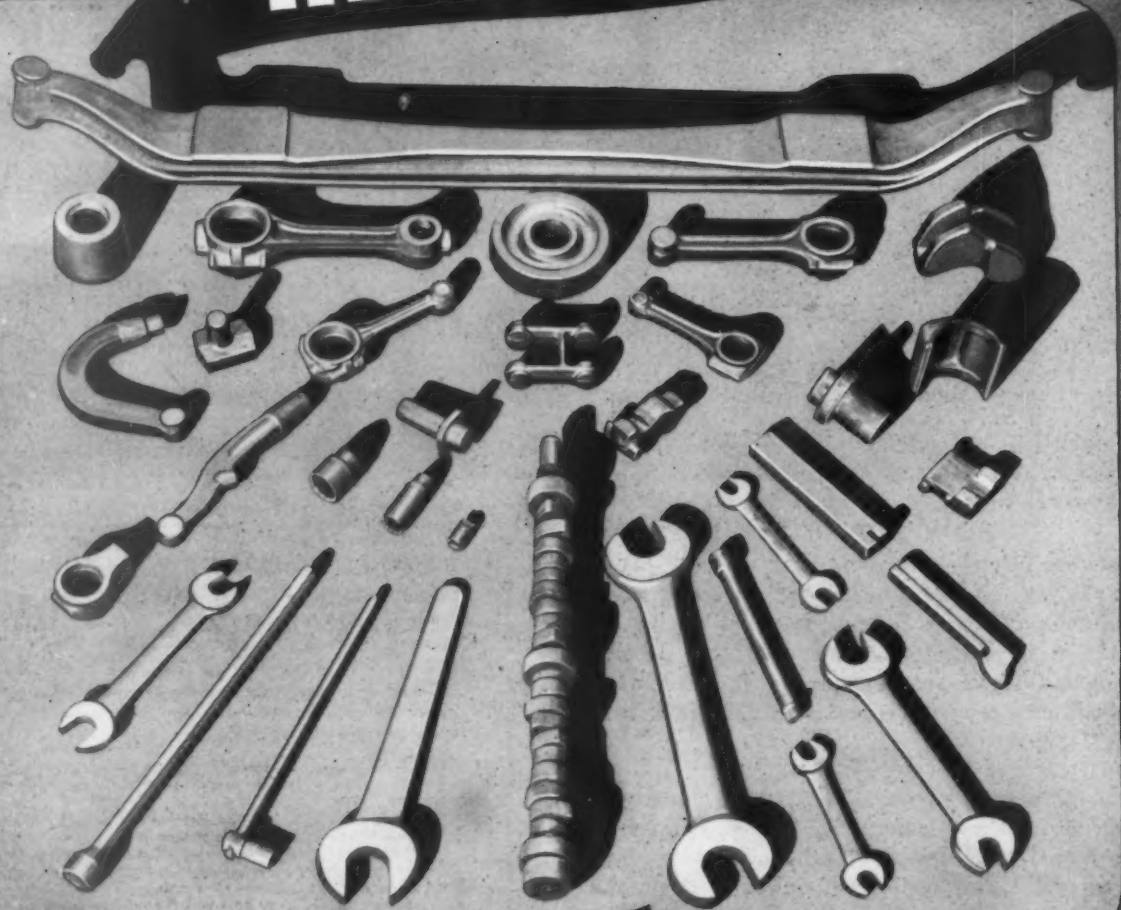
TRADE MARK

Engineering and Research Laboratories:  
Glenville, Conn. PLANTS: Glenville, Conn.;  
Franklin, Mass.; Newburgh, N. Y.; Detroit,  
Mich.



SALES OFFICES: New York, Boston, Philadelphia, Atlanta, Rochester, Chicago, Detroit, Cleveland, St. Louis, Dallas, San Francisco, Los Angeles, Portland, Seattle, Montreal

# HERBRAND



## DROP FORGINGS

..... ANY SIZE OR SHAPE  
UP TO 200 LBS.



If you require quality drop forgings, in quantities of thousands or millions . . . Herbrand is an excellent source of supply. The latest, most modern equipment and machinery are used in the production of these precision forgings. Enduring stamina is built into Herbrand forgings through scientific heat treating by definite process in the latest automatically controlled furnaces. Exact inspection by skilled men assures forgings free from defects. Your inquiries are solicited.



**THE HERBRAND CORPORATION**  
FREMONT, OHIO

# CHECK THESE FREE BULLETINS

● **Centrifugal Castings** of non-ferrous metals and alloys . . . Bulletin No. 143.

● **Centrifugal and Static Castings** of plain and alloyed irons . . . Bulletin No. 144.

● **Centrifugally Cast Tubular Bushing Stock** (and solid bars) in all standard sizes . . . Bulletin No. 145.

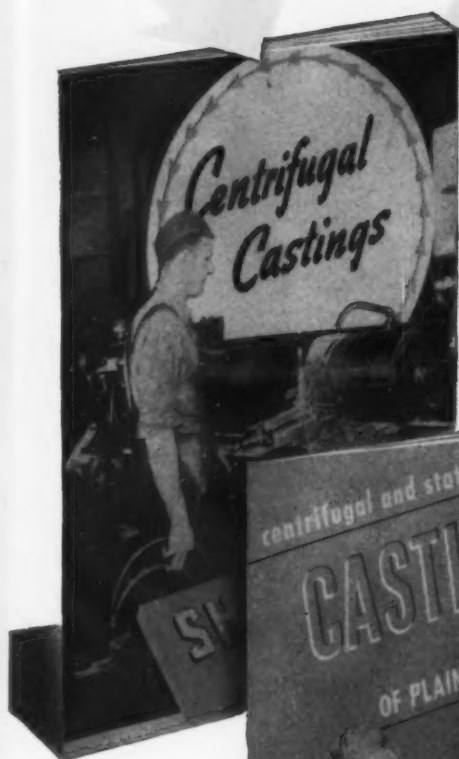
Are you *thoroughly* familiar with what the centrifugal process now has to offer? One of these bulletins could well be your tip-off to big new savings and performance advantages. Write today. We'll send all three bulletins if you wish.

## SHENANGO-PENN MOLD COMPANY

247 West Third Street

Dover, Ohio

Executive Offices: Pittsburgh, Pa.



# SHENANGO - PENN



ALL BRONZES • MONEL  
METAL • ALLOY IRONS



TRUMBULL  ELECTRIC

*Type*

**HEAVY DUTY INDUSTRIAL SWITCHES**



**BLADE TIE-IN CROSS-BAR**

Total disconnect, permanent blade alignment.



**PADLOCKS THREE WAYS**

Locks "on" — locks "off" — locks closed cover.



**BUILT FOR INDUSTRY'S TOUGHEST JOBS**

Machined parts, silvered contacts, snuf-arcs.

**THE TRUMBULL ELECTRIC MANUFACTURING COMPANY**  
PLAINVILLE, CONNECTICUT

OTHER FACTORIES AT NORWOOD, OHIO • SAN FRANCISCO • SEATTLE • NORTH HOLLYWOOD



# RUST-OLEUM STOPS RUST!



## LASTING PROTECTION FOR METAL!

Rust-Oleum is unequalled as an effective rust preventive. Covers metal with a tough, pliable, enduring film that defies rain, snow, dampness, fumes, heat and other destructive elements that cause rust and deterioration. Indoors or out—there are unlimited uses for Rust-Oleum in every industrial plant.

For less than one cent per square foot material cost, you can add years of useful life to buildings,

equipment and other properties. *Rust-Oleum positively stops and prevents rust!* NO SANDBLASTING OR CHEMICAL CLEANERS ARE NECESSARY. Wirebrushing is all that is required to effectively remove scale, blisters, dirt. Rust-Oleum penetrates deeply every pore of the metal surface and merges the remaining rust into the protective film—a water-tight, air-proof, rust-resistant coating that does not crack, blister or peel.

### It Cuts Maintenance Costs 3 WAYS!

#### 1. Protection Lasts Longer

Rust-Oleum LASTS two to ten times longer than ordinary materials on most jobs. This means maximum savings on every application.

#### 2. Preparation is Simplified!

It takes far less preparation time. Wire brushing is all that is required.

#### 3. Rust-Oleum Goes On Faster!

It saves 25% of the time usually required for application and covers 30% more area than ordinary material.

## RUST-OLEUM CORPORATION

2439 Oakton Street, Evanston, Illinois



EASY TO USE . . . .  
LASTING PROTECTION . . .  
FULL SELECTION OF COLORS  
— INCLUDING ALUMINUM

MAIL THIS COUPON — TODAY!

Rust-Oleum Corporation, 2439 Oakton St. Evanston, Ill.

Gentlemen: Please send us a free copy of the new Rust-Oleum Catalog showing color selection and recommended uses.

Name

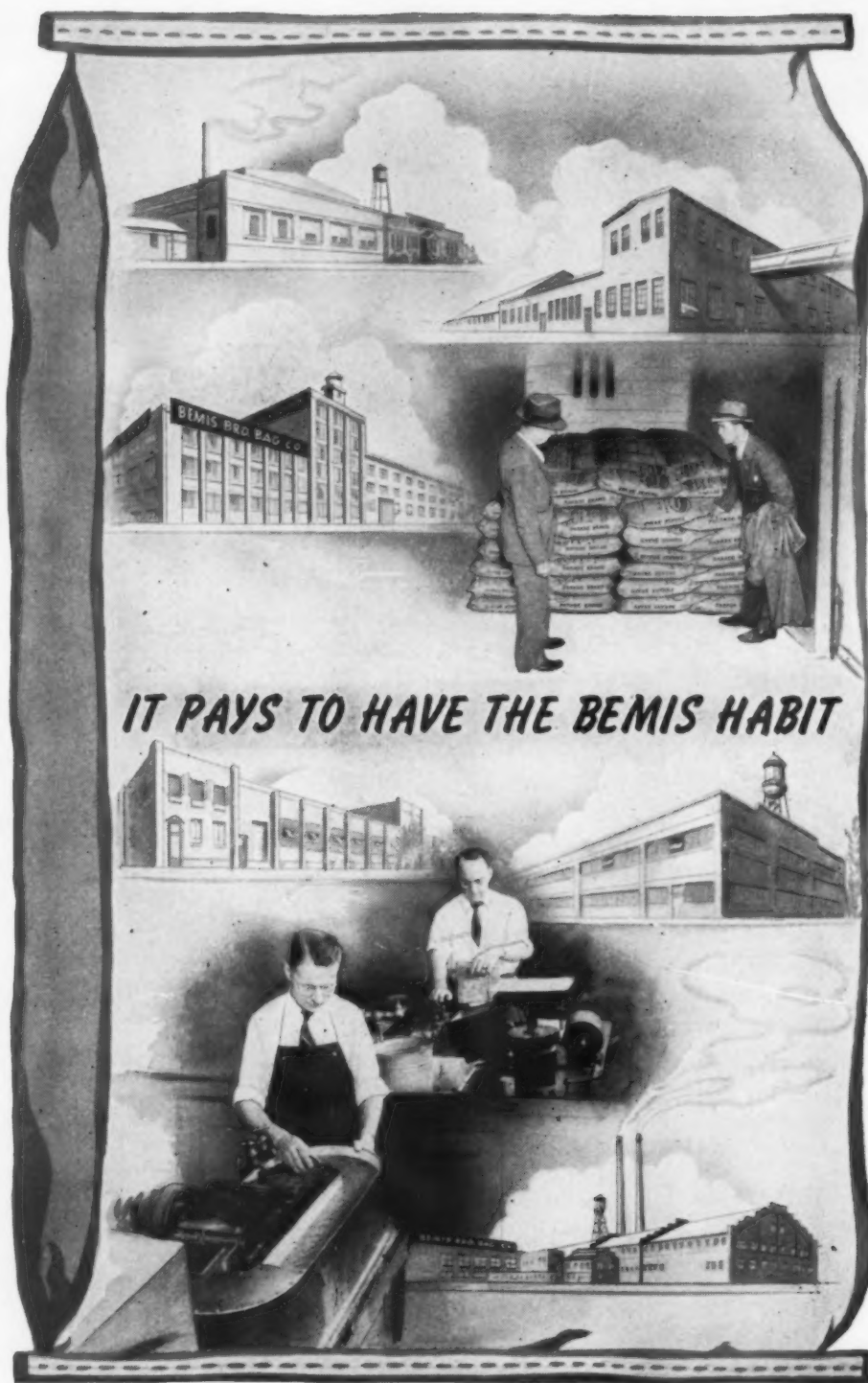
Firm

Address

City  State

**If we  
could  
package  
Bemis  
Multiwall  
Service—  
the brand  
might look  
something  
like this**

Bemis' 6 strategically located Multiwall Plants enable us to give quick service to all parts of the country... to meet peak-season demands. Bemis Packaging Specialists help work out your packaging problems right in your own plant. Often they can improve packing line operations, speed up production, and lower costs. You get all this neatly wrapped up in one complete money-saving package when you choose Bemis Multiwall Paper Shipping Sacks.



## **BEMIS BRO. BAG CO.**

Peoria, Ill. • East Pepperell, Mass. • Mobile, Ala. • San Francisco, Calif. • St. Helens, Ore. • Wilmington, Calif.

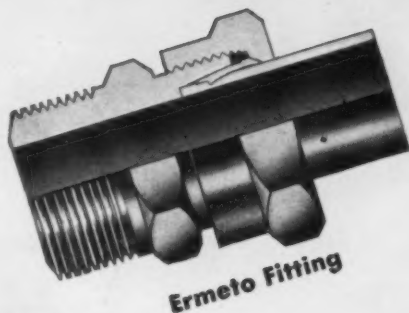
Baltimore • Boise • Boston  
Brooklyn • Buffalo • Charlotte  
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Houston • Indianapolis  
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Minneapolis • New Orleans  
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Omaha • Pittsburgh • St. Louis  
Salina • Salt Lake City • Seattle  
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## 3 SIMPLE RULES FOR A PERFECT FIT



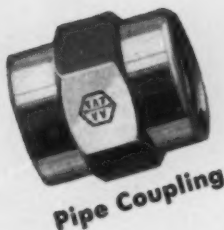
Ermeto Fitting



Compression Tee



S. A. E. Elbow



Pipe Coupling



AN Tube Fitting



Inverted Tee

**H**ERE ARE three simple rules that will help you to quickly solve your "fittings" problems.

**1. Decide what style fitting you need.** Is it an inverted, flared tube type? Is it an SAE flared tube type? Is it a compression type? Is it a pipe fitting? Is it an AN tube fitting? Is it an Ermeto® fitting?

Weatherhead is the world's largest producer of tube fittings and offers you a complete line for every purpose. These fittings are made in brass, steel, stainless steel, and aluminum from bar stock and forging.

**2. Be sure it's made of the best possible materials.** Typical Weatherhead fittings are machined from extruded brass bar stock to eliminate any danger of sand holes or other casting flaws. All have flat sides, making them easy to tighten or loosen with an open wrench. Acid baths and solution washes at the end of the high precision production lines delivers them bright and clean.

**3. Buy it from a reliable manufacturer.** The Weatherhead Company is the leading parts producer in more than a dozen industrial fields and manufactures thousands of different products which are described in numerous catalogs. Write us today and let us know what your needs are. We'll send you a catalog, promptly, which will cover all your tube fittings, flexible hose, hose assemblies or other needs.

\*Trade Mark Reg. U. S. Pat. Off.

Look Ahead with

# Weatherhead

THE WEATHERHEAD COMPANY, CLEVELAND 8, OHIO

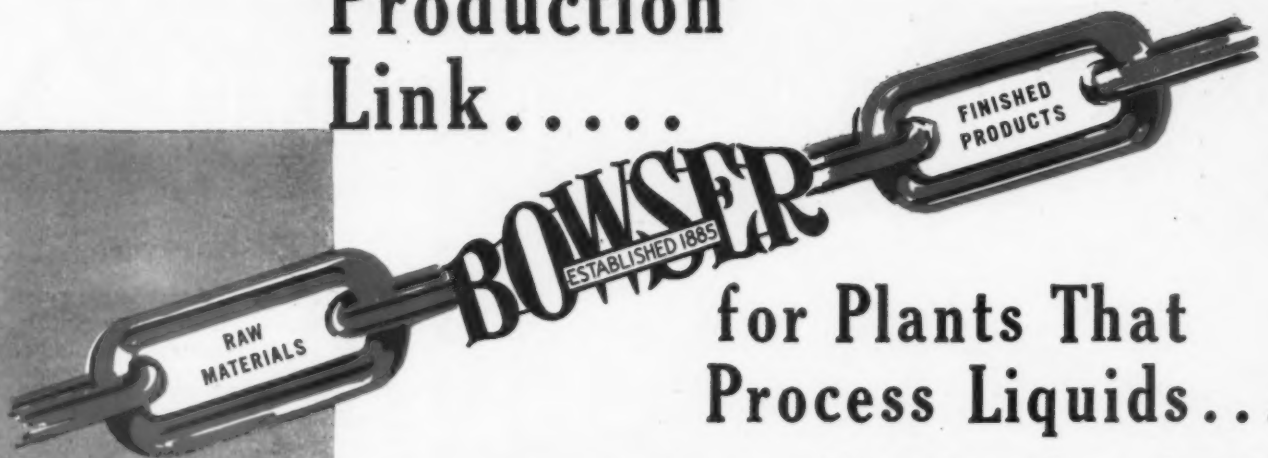


CLEVELAND • NEW YORK • DETROIT • CHICAGO • LOS ANGELES • HOUMA, LA.

### Weatherhead Products Include:

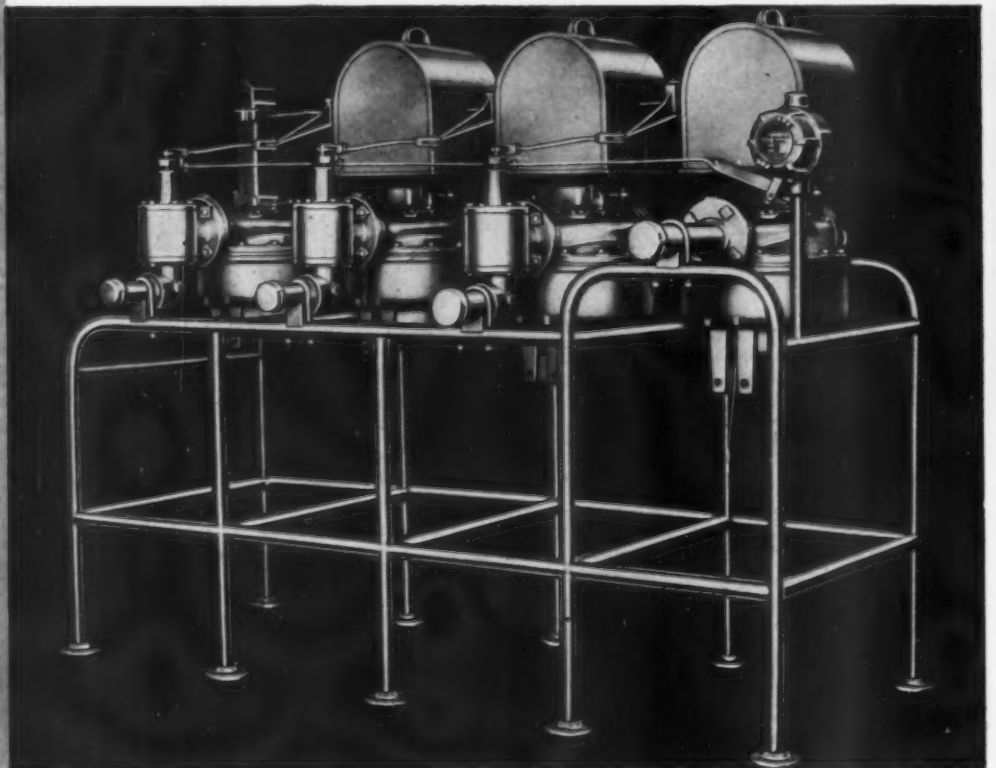
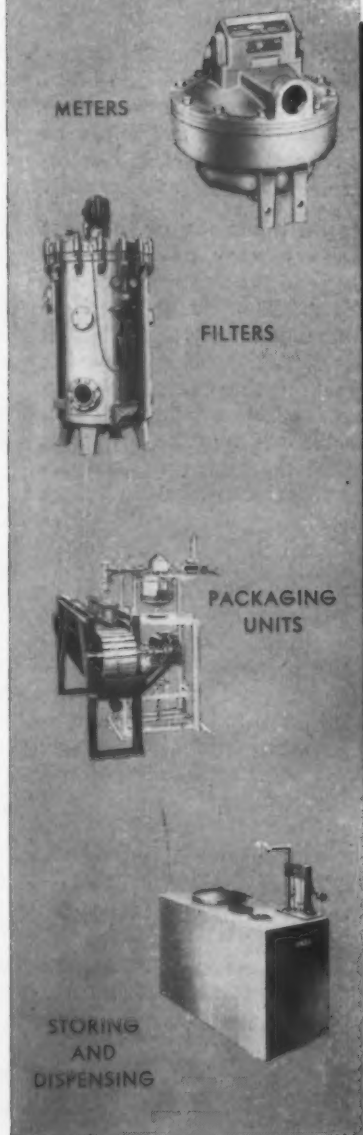
Power Brake Units • Jet Fuel Control Valves • Liquefied Petroleum Gas Regulators • Relief Valves • Flexible Hose Assemblies • Tube Fittings • Refrigeration Valves • Dehydrators

# This Production Link.....



for Plants That  
Process Liquids...

*guarantees uniformity of product!*



The Bowser Figure 402 unit accurately proportions two or more liquids. Patented, precision volumetric meter control. Records quantity of each ingredient as well as finished product. Eliminates costly batch mixing . . . reduces labor, handling costs, storage space and capital investment.

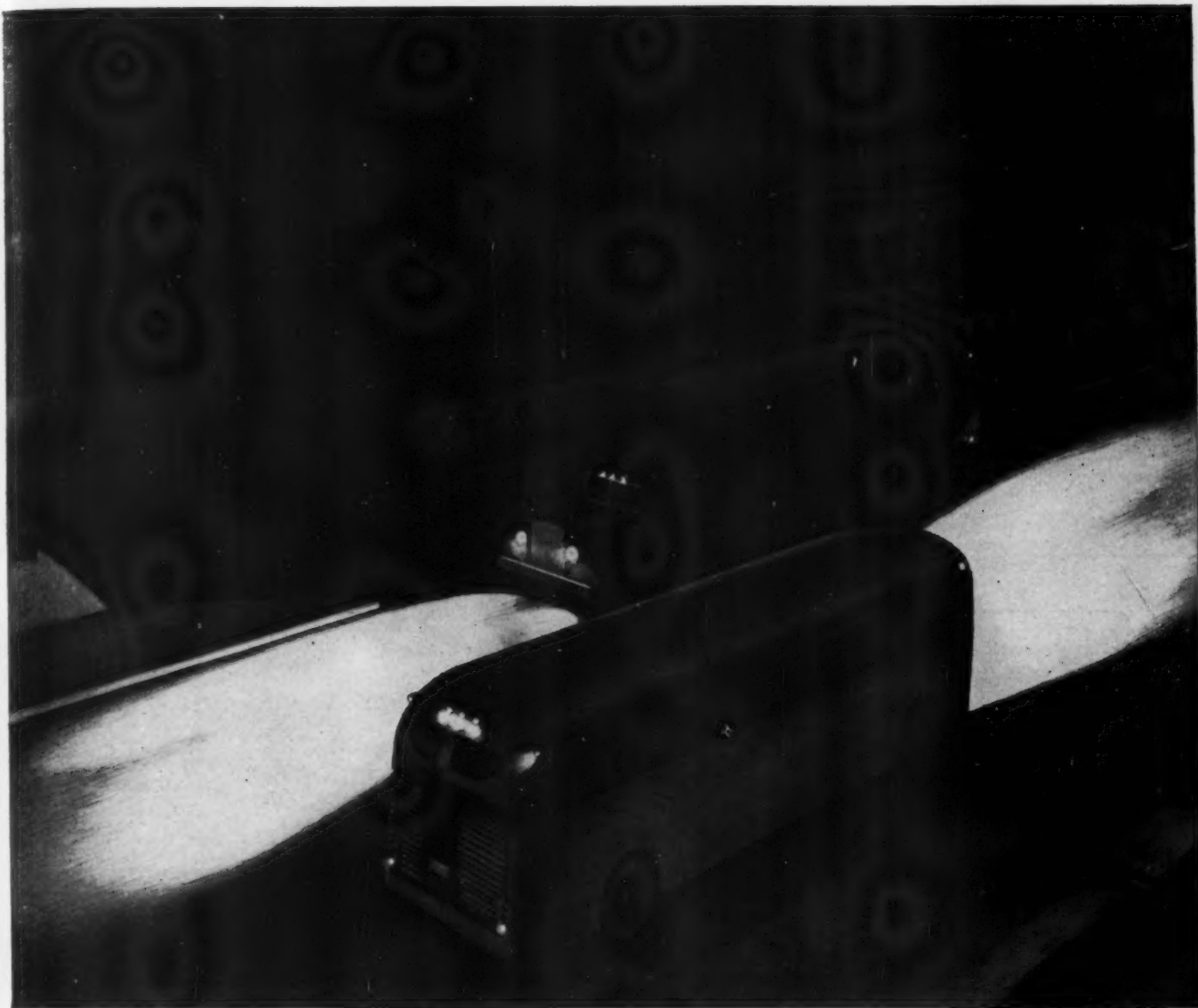
*Sales and Service in all Principal Cities*

**BOWSER, INC.**

**1334 CREIGHTON AVENUE**

**FORT WAYNE 2, INDIANA**

*...Liquid Control Specialists Since 1885...*



## LIKE SHIPS THAT PASS IN THE NIGHT

Along the nation's highways and city streets, the wheeled liners and freighters of land-bound commerce roll through the night with their cargoes of passengers and goods. Before them, piercing headlights cut a path through the blackness; behind, their colored tail lights gleam.

On hundreds of thousands of trucks and buses, power for lighting, starting, ignition and other electrical tasks is supplied by dependable Exide Batteries. Whatever the need, there is

an Exide Battery of the right size, capacity and construction.

Exide Batteries furnish safe, dependable power for time-saving battery electric industrial trucks and mine haulage units . . . for telephone, telegraph, railroad and radio station equipment . . . for aircraft, Diesel

engine cranking, emergency lighting and numerous other uses. And on millions of cars, they continue to prove that "When it's an Exide, you start."

For 59 years the name Exide has stood for dependability, economy, safety and long-life. Information regarding the applications of storage batteries for any business or industrial use is available upon request.

THE ELECTRIC STORAGE BATTERY CO.  
Philadelphia 32

Exide Batteries of Canada, Limited, Toronto

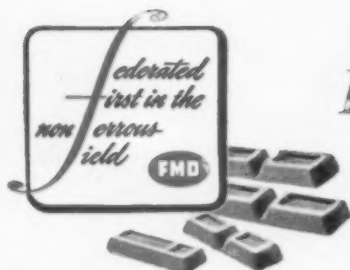
**Exide**  
BATTERIES



# FOUR FEDERATED

# *firsts*

THAT GIVE YOU  
BEARING METAL  
SATISFACTION



## 1 first in **PRODUCT VARIETY**

"XXXX Nickel" and "Thermodyne" tin-base babbitts for heavy bearing loads; "Merit" metal and "Record" lead-base babbitts for lighter loads; "G" and "S" lead-base babbitts for precision bearings or special properties — you get them all from one source, first in the field — Federated Metals Division.



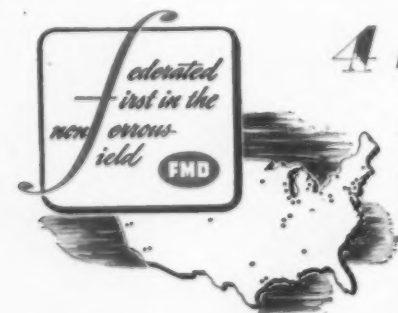
## 2 first in **UNIFORMITY**

Federated bearing metals . . . made with strict lab control to meet Federated's nationally known specifications . . . are uniform in the analyses you need to produce quality bearings.



## 3 first in **TECHNICAL SERVICE**

50 years' metallurgical experience, modern laboratory practice, and real bearing metal know-how . . . interpreted by practical service engineers to keep you informed of latest developments. And Federated's helpful literature tells what bearing metal to use, how to improve bearing service.



## 4 first in **FACILITIES**

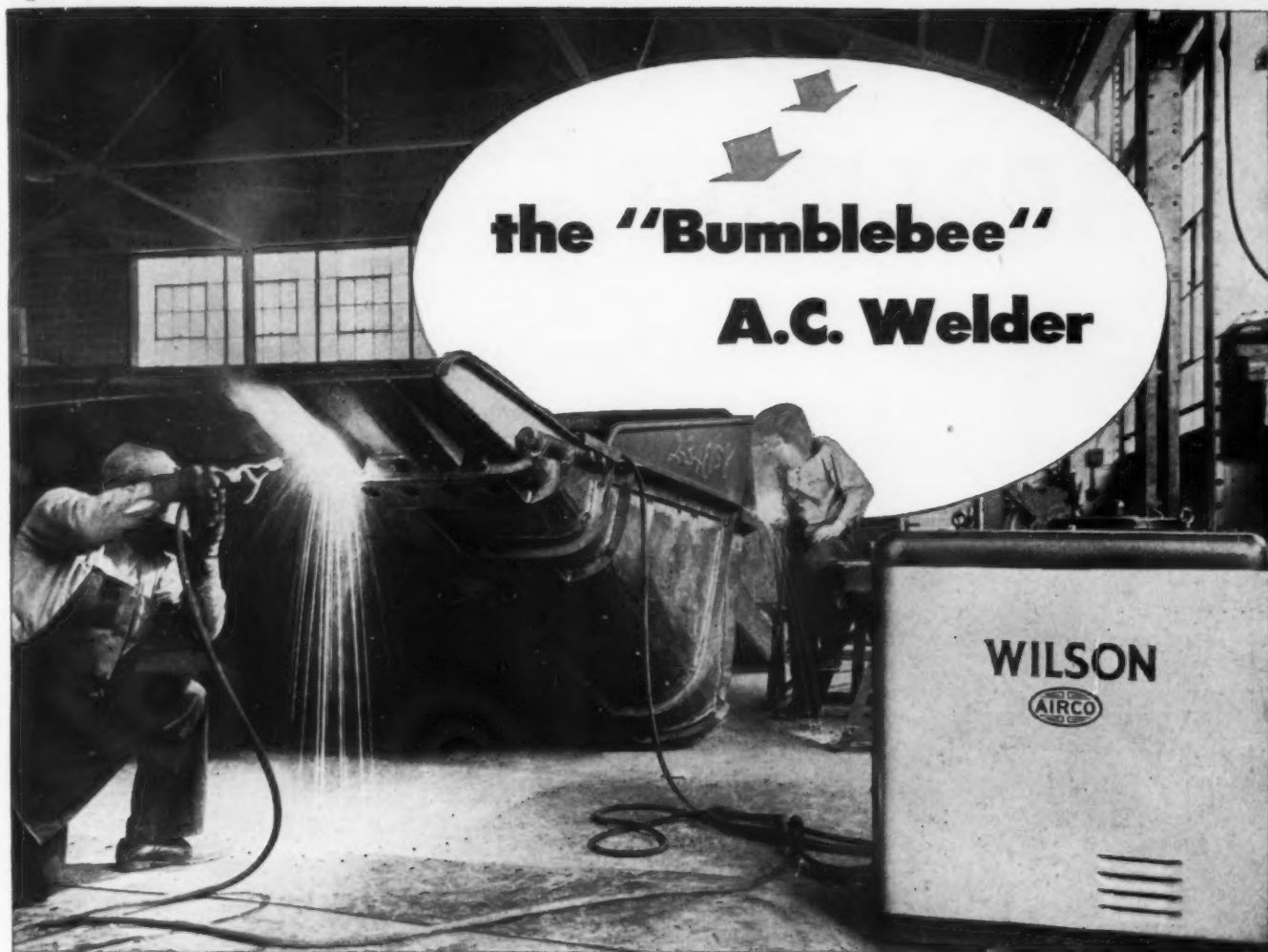
Federated has 11 strategically located plants and 25 sales offices — all the facilities that make it easy for you to deal with an organization in your own area. Deliveries are faster, and there is always a friendly Federated office within easy telephone radius.

When you specify bearing metals, be sure you get the best . . . with the helpful experience of the first in the field. For quality bearing metal, and service that helps you in your work, call or write the Federated office nearest you. *Federated Metals Division, American Smelting and Refining Company, 120 Broadway, New York 5, New York.*

JML:CO F-EB

*Federated* METALS DIVISION

AMERICAN SMELTING AND REFINING COMPANY



## the "Bumblebee" A.C. Welder

### GIVES YOU All These Important Operating Features

- ① **WIDE CURRENT RANGE** from 30 to 275 amperes for the 200 ampere model; 60 to 375 amperes for the 300 ampere machine; and 100 to 625 amperes for the 500 ampere type.
- ② **IMPROVED ELECTRICAL EFFICIENCY** at rated load of 84½%, 81% and 83%, respectively for the 200, 300 and 500 ampere sizes is provided.
- ③ **LOW OPEN CIRCUIT VOLTAGE** (75 volt) works to greater advantage on new AC electrodes and gives perfect ease of welding.
- ④ **VASTLY IMPROVED POWER FACTOR** virtually eliminates the penalty charge of low power factor, and permits the use of smaller primary cables, line switches and fuses. This feature also permits the operation of more welders from existing feeders without causing overload.
- ⑤ **QUIET OPERATION** because there are no rotating parts in the circuit design. The Wilson "Bumblebee" is almost silent in operation.
- ⑥ **MINIMUM MAINTENANCE** because its operation involves no moving parts with the exception of the fan.

These plus values inherent in the advanced design of Wilson "Bumblebee" arc welders make possible *better quality welding with a reduction in power consumption.*



## AIR REDUCTION

Offices in All Principal Cities

Headquarters for Oxygen, Acetylene and other Gases . . . Carbide . . . Gas Welding and Cutting Apparatus and Supplies . . . Arc Welders, Electrodes and Accessories

For more information about the complete line of Wilson "Bumblebee" A. C. welders, fill in the coupon below. Send it to: Air Reduction, General Offices, 60 East 42nd Street, New York 17, N. Y. In Texas: Magnolia Airco Gas Products Company, General Offices, Houston 1, Texas. Represented Internationally by Airco Export Corporation.

AIR REDUCTION  
60 East 42nd Street  
New York 17, N. Y.

PR

Send me copy of your catalog ADW-53.

Firm \_\_\_\_\_

Signed by \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ Zone \_\_\_\_\_ State \_\_\_\_\_

# REDUCE SHUT-DOWNS

## ROLLWAY *with* Right-Angle Loading



### Cut Maintenance Costs Get Longer Bearing Life

Right-Angle Loading splits compound loads into the two component parts of pure radial and pure thrust . . . and carries each of these components on separate bearing assemblies.

## ROLLWAY

### RIGHT-ANGLE-LOADED BEARINGS

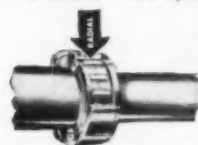
#### WHAT THEY DO

Prevent wedging of rollers and pinch-out • Reduce roller end-rub, with its wearing friction • Hold starting and operating torque at a minimum • Eliminate complicated stresses • Since only pure radial or pure thrust loads can be imposed on any single bearing assembly, unit pressures are substantially reduced • Since all loads are carried at right angles to the roller surface, compound or oblique loads are avoided, and so are the resultants of the oblique loads • Right-angle loading permits Rollway Bearings to carry greater radial or thrust load capacity in any given dimension • Right-angle loading assures solid cylindrical rollers of greater roller mass and uniform roller cross-section . . . greater resistance to shock loads and vibration . . . longer life expectancy under continuous heavy-duty service.

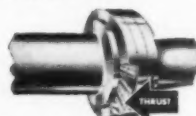
#### FREE SERVICE!

Get the RIGHT Bearings for Your Particular Needs. Rollway Engineers will gladly make necessary calculations, drawings and supply other required information for a complete understanding of your bearing needs. Strictly confidential. No charge, of course.

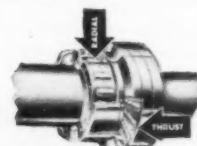
#### HOW THEY WORK



When it's pure radial load, the load bears at a right angle to the rollers.



When the load is pure thrust, it bears at a right angle to the rollers.



When radial and thrust are combined, the two loads are resolved separately at a right angle to the rollers.

# ROLLWAY BEARINGS

ROLLWAY BEARING COMPANY, INC., SYRACUSE, N. Y.

SALES OFFICES: Philadelphia • Boston • Pittsburgh • Cleveland • Detroit • Chicago • Minneapolis • Houston • Los Angeles



In the home "Production Department" . . .

**SUPERIOR STAINLESS** serves



**USE SUPERIOR STAINLESS  
STRIP STEEL**

**for better fabrication . . .  
and better consumer service!**

The gleam of stainless in modern kitchens signifies more than surface quality—it highlights the solid resistance to corrosion, chipping, peeling or wear that *only stainless* can provide.

For maximum fabricating ease, use SUPERIOR Stainless Strip Steel. Precision-controlled in all analyses, dimensions, tempers and finishes, SUPERIOR Stainless is furnished in coils to speed your production processes—*uniformly fine* in every length. Write for our Stainless Brochure!



**Superior Steel**

**CORPORATION  
CARNEGIE, PENNSYLVANIA**

# Things you can depend on...

● Here's the simple reason why you can expect long wear and dependable performance from Pittsburgh Brushes . . . constant, careful supervision is maintained in every detail of manufacture from raw material to finished product.

Every effort is directed toward keeping the quality of Pittsburgh Brushes consistently high. That is why, when you specify Pittsburgh, you always get the same fine brushes from order to order.

Pittsburgh service is dependable, too. Orders are promptly filled to your specifications through any one of 144 Pittsburgh branches strategically located for your convenience. Ask our experts to help you select the right brushes for each of your requirements.

## WEBSTER DICTIONARY



## and BRUSHES by Pittsburgh



### PRODUCTION AND MAINTENANCE BRUSHES, TOO

● "Pittsburgh" also manufactures a full line of Industrial Brushes—including Floor Sweeps, Mill Dusters, and Wire Scratch Brushes. Our engineers will be glad to work with you in developing "Even Trim" Spiral Wound brushes of wire, horsehair or tampico to meet your own special finishing requirements.

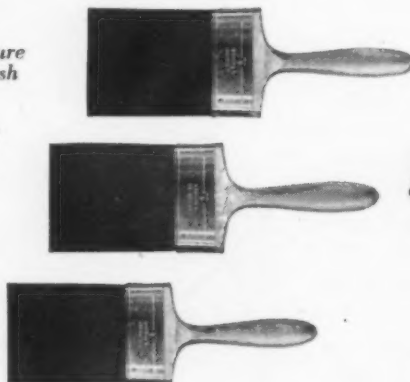
## BRUSHES by PITTSBURGH—a Complete Line for Every Industrial Use

### THREE FAMILIES

Pittsburgh's 100% Pure Bristle. No finer brush made today.

Pittsburgh's exclusive Bristle-Neocota. Top quality performance. Costs about 1/2 less.

Pittsburgh's 100% Neocota. Costs about half as much as pure bristle, yet gives excellent performance and has special advantages, such as high resistance to water.



AND

AS SOON AS  
POSSIBLE  
*Gold  
Stripe*

the supreme quality brush  
for every painting need.

**PITTSBURGH**  
PLATE GLASS COMPANY

*Brush Division*

# Outstanding!



## THROUGH FIVE GENERATIONS OF FINE TOOL-MAKING

There's a reason why men who know fine tools have, for over ninety years, chosen Plumb.

Plumb tools have outstanding features of quality—the one-piece steel head, the comfortable shock-absorbing handle made from tested second-growth hickory, the perfect “hang” and fine appearance. Plumb's constant research, engineering and design in fine tool-making have made Plumb tools the outstanding choice of five generations of craftsmen. Fayette R. Plumb, Inc., Philadelphia 37, Pa.

TESTED  
U. S. A.  
**PLUMB**  
HICKORY

**Quality Comes FIRST**  
**PLUMB**  
**is FIRST in Quality**

# PLUMB

HAMMERS • HATCHETS • AXES • SLEDGES





## Do you grind away profits every hour?

**One thing** about grinding costs—you can grind away profits every hour without even suspecting it.

There is a way to eliminate those production inefficiencies that creep in. That way is the Peninsular method of complete grinding analysis.

**Here's our proposal:** Let Peninsular Engineers give your grinding a thorough study. Peninsular has specialized since 1889 in discovering hard-to-find grinding waste. In all probability, Peninsular Engineers can also save you money—once they've

analyzed your operation.

This analysis includes a complete study of your equipment, the material to be ground and all other factors that influence grinding costs. Equipped with such knowledge, Peninsular Engineers are able to give you job-designed performance at minimum cost.

**The Peninsular Grinding Wheel Co.,**  
729 Meldrum Ave., Detroit 7, Michigan.  
**Sales Offices:** Chicago, Philadelphia, Boston, Buffalo, Cleveland, Pittsburgh, Houston, St. Louis, Cincinnati.

# PENINSULAR

INDIVIDUALLY  ENGINEERED

## GRINDING WHEELS

SINCE 1889

SPECIALISTS IN RESINOID BONDED WHEELS

*This Peninsular "sun dial" has a straight wheel face, one segment from a disc wheel for an indicator and several cylinder wheels for a base.*





## THESE HARSHAW PLANTS ARE AT YOUR SERVICE



### CHEMICALS MADE BY THE HARSHAW CHEMICAL CO.

are used nation-wide by industries, including: Aeronautical, Ceramic, Electroplating, Feedstuff, Fertilizer, Food, Glass, Insecticide, Laundry, Leather, Paint and Varnish, Paper, Petroleum, Pharmaceutical, Printing Ink, Porcelain Enamel, Pyrotechnic, Rubber, Textile, Varnish and Wallpaper.



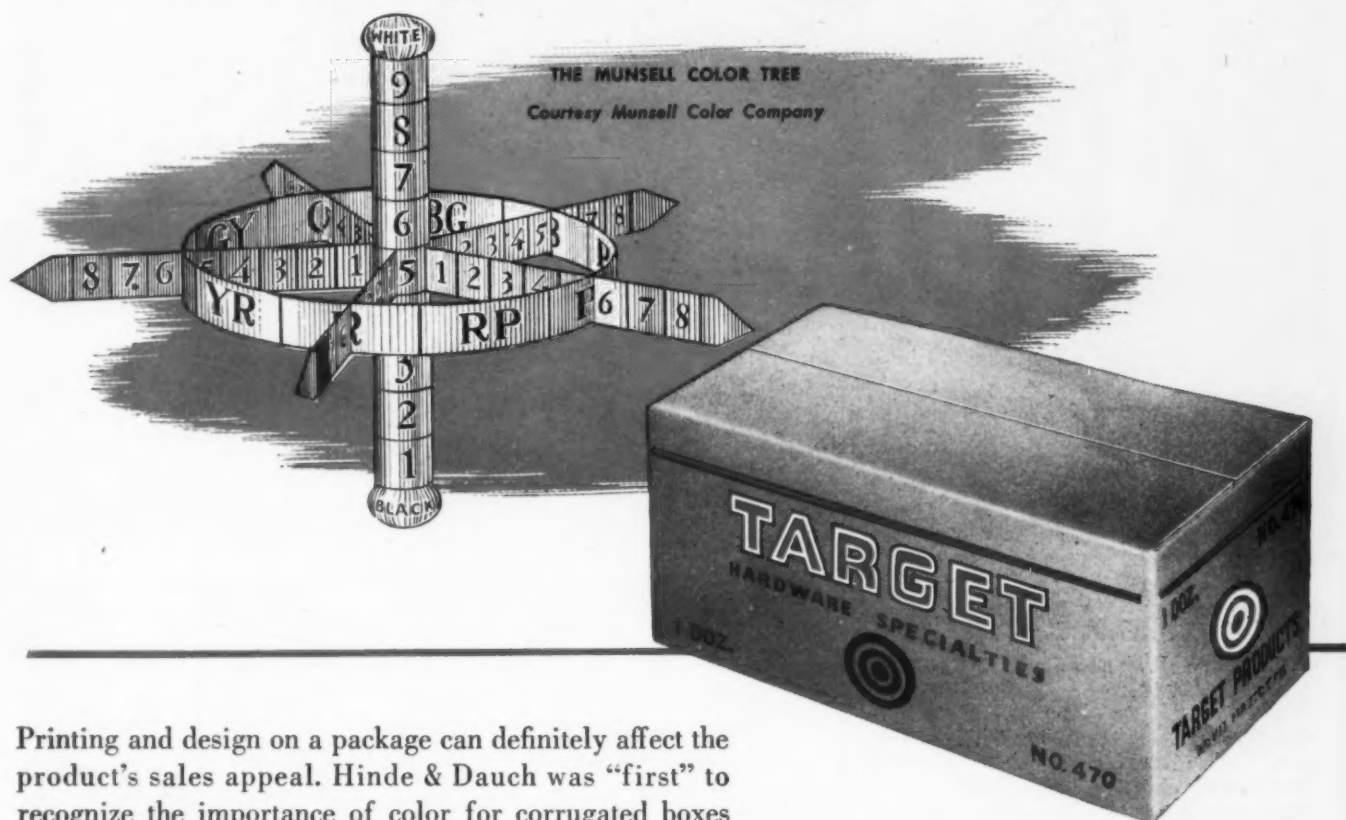
When you buy Harshaw products, you have comfortable assurance of continued supplies, good prices, and adequate service. Four plants, located strategically with respect to raw materials, labor supplies, shipping facilities, and markets, meet your requirements with maximum efficiency. The facilities of these plants are augmented by production from six affiliate plants, and by warehouse stocks of our nine sales offices located in principal cities.

*Order from Harshaw with confidence.*

**THE HARSHAW CHEMICAL CO.**  
1945 East 97th Street, Cleveland 6, Ohio  
BRANCHES IN PRINCIPAL CITIES



# first to apply a standard, scientific COLOR system to corrugated box printing



Printing and design on a package can definitely affect the product's sales appeal. Hinde & Dauch was "first" to recognize the importance of color for corrugated boxes . . . was "first" to adopt the Munsell system for accurately selecting, naming and classifying color. For years, H & D customers have had complete assurance that there would be little or no variance in colors—between one box order and another. On the long list of H & D "firsts" are also PREPAK\*, the unit package; DUPLEX, the shipping-display box; and the duo-use LUGGAGE BOX. These "firsts" increase sales potentials, by reducing loss from damage in transit, by cutting packaging and distribution costs. The Hinde & Dauch Paper Company, 4706 Decatur Street, Sandusky, Ohio.

LOOK TO



FOR PACKAGING

"firsts"

\*TRADE MARK REG. U. S. PAT. OFF.

## **HINDE & DAUCH** • *Authority on Packaging*

**FACTORIES IN:** Baltimore 13, Maryland • Buffalo 6, N. Y. • Chicago 32, Illinois • Cleveland 2, Ohio • Detroit 27, Michigan • Gloucester, N. J. • Hoboken, N. J. • Kansas City 19, Kansas • Lenoir, N. C. • Montreal, Quebec • Richmond 12, Virginia • St. Louis 15, Missouri • Sandusky, Ohio • Toronto, Ontario • Boston, Mass.



Continental-Diamond  
**C - D**  
*Engineered Non-Metallics*

## HOW DIAMOND VULCANIZED FIBRE HELPS YOUR PURCHASING PROBLEMS...

### C-D NON-METALLIC PRODUCTS

#### DIAMOND VULCANIZED FIBRE

**VULCOID**—Resin Impregnated Vulcanized Fibre.

**DILECTO**—Thermosetting Laminated Plastics.

**CELORON**—A Molded Phenolic Plastic.

**MICABOND**—Built-up Mica Electrical Insulation.

**HAVEG**—Plastic Chemical Equipment, Pipe, Valves and Fittings.

#### STANDARD & SPECIAL FORMS

Available in Standard Sheets, Rods and Tubes; and Parts Fabricated, Formed or Molded to Specifications.

#### DESCRIPTIVE LITERATURE

Bulletin GF gives Comprehensive Data on all C-D Products. Catalogs are also available.

There is no end of profitable applications for this versatile material. It is used in a multitude of mechanical, structural and electrical applications because of its unique combination of lightweight, strength, toughness, resistance to wear and abrasion, excellent arc-resistance and good dielectric properties.

Diamond Vulcanized Fibre is available in sheets, rods and tubes which are easily and cleanly fabricated on woodworking or metalworking machinery. It can be formed and punched; cut and sawed; drilled and tapped; turned, threaded and reamed . . . or, if you wish, we can supply the parts you need fabricated to your specifications.

Long experience in fibre application engineering, in connection with our complete line of laminated (Dilecto) and molded (Celoron) plastics, enables us to render unbiased recommendations for the best application of fibre to the solution of your mechanical and electrical problems. Just call in a Continental-Diamond Technician—or write for your Continental-Diamond Fibre catalog.

DP-4-47

BRANCH OFFICES: NEW YORK 17 • CLEVELAND 14 • CHICAGO 11 • SPARTANBURG, S. C. • SALES OFFICES IN PRINCIPAL CITIES  
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**Continental - Diamond** FIBRE COMPANY

Established 1895... Manufacturers of Laminated Plastics since 1911—NEWARK 41 • DELAWARE



## the Forgesmithing factor in "OK" steel forgings

• Mighty as is the power of the forging press, the long acquired skill of the forgesmith is a most vital factor. To produce correct grain flow without impact damage to the structure of the steel is a matter of personal skill. The metal is formed by a powerful squeeze which penetrates throughout the ingot. The proper application of this squeeze to produce a forging of uniform structure is skill from experience.

National Forge standards call for careful pre-heating ("soaking") to the prescribed forging

temperature, completion of the forgesmithing before the ingot cools below safe working heat and careful temperature control after forging to prevent cooling strains impairing the strength of the steel. As National Forge makes its own basic electric steel, it has the advantage of working with steel that is specifically made for each forging under strict metallurgical control.

Let us give you the latest facts and data applying to the type of steel forgings required in your plant or product.

STEEL MAKERS

FORGESMITHS

HEAT TREATERS

MACHINISTS

# National Forge

AND ORDNANCE COMPANY

Irvine, Warren County, Pennsylvania



At the outset of the Spanish-American War, Roosevelt organized the 1st U. S. Volunteer Cavalry. The reckless and exultant sweep of Roosevelt and his "Rough Riders" at San Juan Hill notably contributed to breaking the Spanish spirit.



## 51 Years Before San Juan Hill . . . CHASE was manufacturing Better Bags

He rode from the far-off western plains to San Juan Hill to the White House—a colorful, vigorous, and outspoken champion of the underprivileged and of American rights! T. R.—he is honored, respected, and he will never be forgotten!

During this thrilling chapter of American history, and many years before, Chase was manufacturing bags of all types for agricultural products, industrial and military supplies and equipment.

Today we celebrate our Centennial. This is important to you, we believe, because our 100 years of experience is your assurance of a better container for your products.

Your nearby Chase salesman will be glad to provide complete information.

**COTTON BAGS • TOP MILL BURLAP BAGS  
SAXOLIN OPEN MESH BAGS • PRO-  
TEX BAGS • MULTIWALL AND OTHER  
PAPER BAGS • PROTECTIVE PAPERS**



One Hundred Years of Experience  
in Making Better Bags for  
Industry and Agriculture.

**CHASE BAG CO.**

GENERAL SALES OFFICES

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ARK. • DALLAS • DENVER • DETROIT • GOSHEN, IND. • HARLINGEN,  
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WAUKEE • MINNEAPOLIS • NEW ORLEANS • NEW YORK • OKLAHOMA  
CITY • ORLANDO, FLA. • PHILADELPHIA • PITTSBURGH • PORTLAND,  
ORE. • REIDSVILLE, N. C. • ST. LOUIS • SALT LAKE CITY • TOLEDO

# F.O.B. *Philosophy of buying*

**H** EADLINE writer for the June issue of *Retailing*—*Home Furnishings* apparently doesn't know about the headaches that go with a buyer's job, for he captions the news of a purchasing appointment: "Dutton Named to Easy Post." Reading on, however, we learn that the man in question has been named Purchasing Agent for the Easy Washing Machine Company at Syracuse. With that explanation, all is forgiven.

**G** R E A T E R appreciation of the purchaser's problems was shown at the N.A.P.A. convention by Irwin H. Cornell, whose job is selling lead to purchasing agents. "Thank Heaven," said Mr. Cornell, "I don't face the danger of becoming a buyer of lead—unless perhaps sinkers—at my time of life. . . . The problems of procurement are tremendously more difficult than those of marketing."

**P** U B L I C I T Y is a mighty force in purchasing as in other fields. Witness the experience of Allegheny County (Pittsburgh) Purchasing Agent Michael Donahue, who needed nails to finish a construction project at South Park. The listed price was \$5.04 per keg, but the offers he received ran from \$10 up. He told the Commissioners about it and the report got into the newspapers. The following day, two legitimate suppliers turned up with quotations at the standard price. At the *Pittsburgh Press* reports the incident: "The gray market in nails turned lily white today."

**B** L A C K M A R K E T S in steel were the target of a recent campaign by the Purchasing Agents Association of Detroit, which also got the prompt attention and support of the daily press in that city. A furore of charges and counter-charges ensued. It is pretty hard to judge who won the argument, but it is clear that the immediate

result was to put the marketers, instead of the buyers, on the defensive.

**M** A N - O F - T H E - W E E K in a recent issue of the Syracuse (N.Y.) *Herald-Examiner's* popular editorial feature of that title, was Merton E. Jennings of the Selflock Screw Products Company, known to a host of purchasing agents as one of the stalwart members of the Syracuse and Central New York Association. The biographical sketch also reveals him as a leader in the Safety Division, Syracuse Chamber of Commerce, the Manufacturers Association of Syracuse, Children's Bureau, Community Chest, Bank of East Syracuse, Kiwanis, and University Club.



**P** H I L C O Corporation dramatized its selling theme by means of a clever puppet show at the annual sales meeting at Virginia Beach. Theme of the skit was "Sell All Three"—namely, the Purchasing Agent, the operating personnel, and the maintenance people. We are intrigued by the description of the characters, appearing on the first page of the script: suggesting how we look to the sales fraternity and their ideas of what will appeal most strongly to each.

Harry—Hot shot salesman; business suit.

Tom (Supt.)—Drawl voice; business suit.

Bill (P.A.)—Conservative, simple; shirt sleeves.

Dick (Maint.) — Uneducated; work shirt.

The sales plan for accomplishing the threefold job includes three types of literature specifically designed for each of these three groups. In the skit these were personified by three feminine figures described as follows:

Struckie (Instruction card for maintenance people)—Tough, and rough.

Fanny Manual (Operating manual for superintendent)—Homebody, but smart.

Cathy Catalogue (for P. A.)—Glamorous and sexy.

• •

**P**PRIVATE brand names are a recognized device in marketing, but the practice also involves some problems and complications of purchasing, both on the part of the distributor and of his customers. Of considerable interest, therefore, is the recently announced policy of Safeway Stores, to carry standard brands that consumers ask for, along with its own line of private brand premium quality foods. Says President L. A. Warren:

"As a purchasing agent, Safeway must maintain a bargaining position in its procurement activities in order to preserve its freedom of action in buying for the needs of its customers. If Safeway does not have a bargaining position in relation to the suppliers of the commodities desired by its customers, the customers have no bargaining position. Believing in the soundness of these principles from the standpoint of the company and its customers, Safeway has, when necessary, acquired sources of partial supply in several classes of commodities. With the yardsticks thus available, we are able to measure prices and other market conditions in the commodities involved."

• •

**S**STATISTICS indicate that most prices were over the postwar hump by the end of the first quarter. A few, like hides and leather, reached their peak in the closing months of 1946, and have been drifting lower since that time. For most, the high point came in March and April, when the general index turned, with others falling in line in May. Showing strongest resistance to the general trend are fuels, ferrous metals, paper, and agricultural commodities.

*Pick*



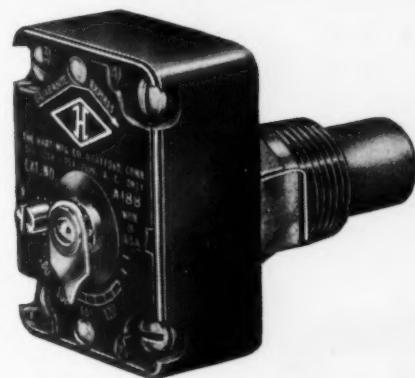
## AUTOMATIC ELECTRIC TEMPERATURE CONTROLS

for  
**Accuracy—Long Life  
Dependability**

Efficient design and rugged construction make "Diamond H" electric temperature controls your best choice for domestic and commercial cooking, water heating and industrial applications requiring accurate thermostatic control of electrical heating circuits.

Hot water and oven type thermostats with current ratings to 35 A., 230 V., A.C. Operating temperatures to 550° F.

Hydraulic, immersion type for water and other liquid applications. Snap action. Silver contacts. 30 A., 115 V.; 25 A., 230 V.; A.C. only.



"Diamond H" controls will be engineered to your requirements. Ask about "Diamond H" switches, pilot lights or convenience outlets.

**THE HART MANUFACTURING COMPANY**  
207 BARTHOLOMEW AVENUE, HARTFORD, CONN.



STYLE NO.  
920

## R/M FLEXIBLE METALLIC PACKING

R/M's flexible metallic packing is a new and valuable addition to the R/M line, recommended for use on steam and air rods, centrifugal pump shafts, valve stems and other applications where the temperature does not exceed 450° F., and surface speed is less than 600' per minute.

Like a fabric packing, this packing is sensitive to gland adjustment, but it has the added advantage of non-frictional wearing surface. It is constructed of non-frictional metallic foil and asbestos yarns, combined with temperature-resistant lubricants and flake graphite. The outer layer is an open-mesh, braided cotton jacket.

This packing is typical of the engineering that goes into R/M products. For special jobs where you need packing by prescription, or for the routine work where you demand the utmost in dependability, see the authorized R/M distributor near you.



## RAYBESTOS - MANHATTAN, INC.

ASBESTOS TEXTILE & PACKING DIVISION

Manheim, Pa. • Bridgeport, Conn. • North Charleston, S. C. • Passaic, N. J.

IT'S "PACKED WITH SATISFACTION" WHEN YOU USE R/M





Poor parts mean a poor product. Good parts, skillfully made and suitably finished, protect your product and its market. The skill and practical knowledge gained from 49 years of *doing* things with aluminum and stainless steel keeps us busy doing more things, for people who value good workmanship and to-the-letter compliance with contract.

If those are *your* requirements, we should have a talk . . . soon.

**A CONTRACT PLACED WITH US EXPANDS YOUR PLANT TO INCLUDE...**

- Machine Shop and Die-Making Facilities
- Four Large Fabricating Plants
- Spacious Aluminum Rolling Mills
- Wide Range of Stamping Presses
- Heat Treating Equipment
- Gas and Electric Welding
- Complete Finishing Equipment

**CONTRACT, AUTOMOTIVE AND AVIATION DIVISIONS**



ALSO MAKERS OF  
**MIRRO**  
The Finest Aluminum  
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Envelope Making

Album Cover-labeling

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**YES** →

As specialists in developing and applying adhesives made from every available base, we are in the unique position of being able to deliver the exact types of adhesives needed to do any packaging and shipping job — *completely and successfully!*

Address: 270 Madison Avenue, New York 16; 3641 So. Washtenaw Ave., Chicago 32; 735 Battery St., San Francisco 11; and other principal cities. In Canada: Meredith, Simmons & Co., Ltd., Toronto and Montreal. In England: National Adhesives, Ltd., Slough.

**National**  
ADHESIVES

EVERY TYPE OF ADHESIVE FOR EVERY INDUSTRIAL USE

# Purchasing Previews



## A Washington Report . . . . . for Purchasing Agents

August 1, 1947

### FOREIGN AID PLANS POSE MANY PROBLEMS....

Crest in the domestic demand for materials, goods and services has been reached. Question now is how much can be exported.

It is generally agreed that any full-scale program to reconstruct Europe—to substantially repair war damage—will strain the resources of this country. Europe's needs do not necessarily fit into the areas of this country's surplus.

In the food field, the U.S. crop goals anticipate large export. As far as metals, minerals and materials are concerned, export takes out of the country the raw materials required to keep our plants in full production.

Such full production, on the other hand, tends to produce a surplus of finished products, many of which fall into a comfort or luxury category, rather than into reconstruction requirements. This poses a problem of balance.

The problem is especially complex in a free market economy. The lend-lease program, and later the UNRRA shipments, were paced by control over both materials and production. Desired levels of industry to meet the domestic needs were determined, and superimposed were the needs for foreign shipment. Necessary materials were allocated, and the products were disbursed in accordance with priorities.

In a free market, when domestic demand is great, there is practically no exportable surplus of such a strategic reconstruction material as steel, or of certain basic chemicals.

On the other hand, some of this strain on materials is created by the export of finished products abroad, and indeed export will become the key to full production and full employment for many industries.

To the purchasing agent interested in buying materials and products abroad, the effort to rebuild foreign economies will mean expanded trade.

In the domestic markets, any extended program for world reconstruction will mean that export as a demand factor will compete strongly for materials and products.

### THE NEW LABOR LAW AND THE P.A....

While the new labor law does not impinge directly on the activities of the P.A., no one recalling the scarcities and delayed deliveries created by the wave of strikes in 1946 can ignore the fact that a purchasing agent must now consider labor conditions in making procurements.

Labor leaders forecast that the new law will result in a series of nation-wide strikes. This position is based on the presumption that the new law is unworkable, and that the conditions which it prescribes will precipitate strikes, rather than minimize them.



If the strike predictions materialize, purchasing techniques will have to include a knowledge of the labor relations at the source of supply. It appears that if trouble does develop, the work stoppages will occur at plants where labor relations are poor, rather than throughout an entire segment of industry, as was largely the case last year.

#### MODERATE PRICE ADJUSTMENTS ANTICIPATED....

Labor developments now hold the key to the price outlook. Wholesale prices have remained stable for some time. There are still evidences of price increases, but these are moderate.

At the same time, there have been significant price decreases. The principal area of price softening, according to the Department of Commerce, has been in industrial raw materials. This trend is interpreted as the forerunner of adjustments all along the price front.

Only deterrent to the price correction as anticipated would be a sudden stoppage of production, or conditions where the rate of production were reduced, leading to scarcity conditions.

The trend in hourly earnings in manufacturing has been upward without interruption for the last year and a half. Commerce Department reports that during the 12-month period ending May 1947, hourly earnings in all manufacturing increased by 13%.

Antidote for this constantly increasing wage level can only be a corresponding increase in output per man-hour. If such a compensating development does not set in, the upward trend in prices cannot be reversed.

#### BALANCING OF INVENTORIES INDICATED....

Book values of manufacturers' inventory continue to increase, but there are indications that this trend is tapering off.

The durable goods industries account for the major portion of the increase. The most recent statistics of the Department of Commerce show that the inventory holdings of all types of durable goods industries increased. While the average was from two to three percent, the metal fabricating industries tended to expand the value of stocks to a greater degree than did the basic producing industries.

In the non-durable goods industries, stocks of food manufacturers continued to decline, but this was offset by increases in inventory in other categories of non-durable goods.

At the same time, value of manufacturers' shipments dropped off slightly. It is generally assumed that these reports indicate a balance between supply and demand.

The continued increase in inventory reflects a gradual balancing of inventory, and to some extent the fact that the dollar value increase reflects in part the increase in prices rather than in actual physical volume.

#### RETAILERS DON'T WANT TO BE CALLED SMALL BUSINESS....

Periodically a voice is raised in behalf of small business---to a degree where small business has become a slogan. The Committee for Economic Development has added its recommendations to bolster the awareness that small business is important as a buffer against monopoly.

More recently, however, the representatives of the largest group of small businessmen in the country---the retailers---told the Department of Commerce, in no uncertain terms, that they did not want to be placed in the category of small business. They maintained that their special problems arose out of their function as retailers, rather than out of the size of their operations.

These retail spokesmen pointed out that any Office of Small Business should service and aid small manufacturers..

# HOW AUTO MAKER CUTS SHIPPING COSTS

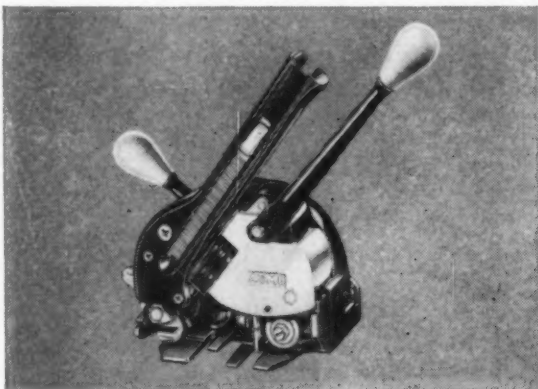
**Nash Motors Division uses low-cost Acme Steelstrap to speed units to production line.**

The Milwaukee Parts Plant, Nash Motors, Division of Nash-Kelvinator Corporation, relies upon Acme equipment and material to handle its bulk packing problems.

Acme Shipping Specialists helped Nash engineers devise packing operations that materially reduced costs and facilitated movement and safe shipping of units between plants. (See the three examples of better shipping at lower cost on this page.)

Acme Shipping Specialists will be happy to consult with your company on specific or general problems of packing and shipping. They can help you, and without obligation.

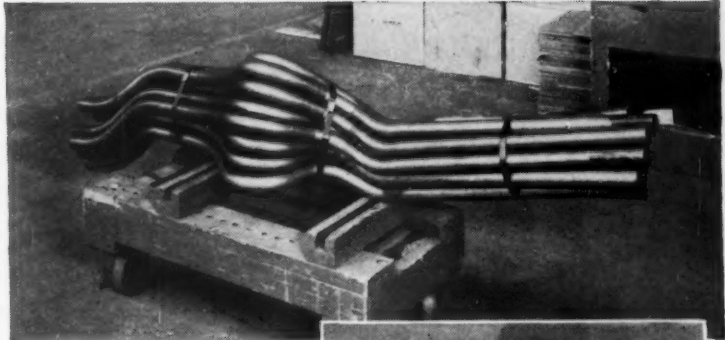
Find out how Acme Steelstrap users in many industries now show a *profit* in their shipping rooms. Send for free case history booklet, "SAVINGS IN SHIPPING."



**NEW! More savings ahead** with Acme No. 3 Steelstrapper—the lightest tool made. Magazine holds 100 seals. Tensions, seals, and cuts the strap in one operation. Small base requires only 5-inch strapping surface. Two levers working in opposite directions make for excellent balance and easy handling.

## ACME STEEL COMPANY

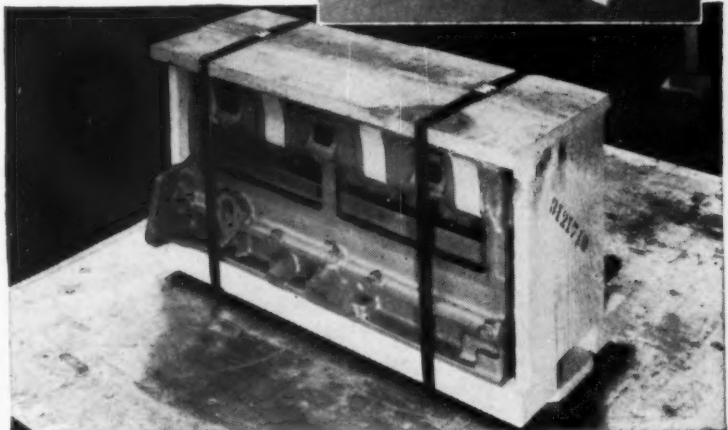
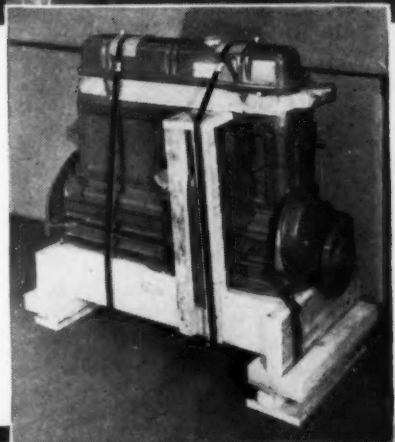
NEW YORK 7 ATLANTA CHICAGO 8 LOS ANGELES 11



**50% SAVED!** Acme Uni-Pak, in which a bundle of tailpipes is wrapped with three bands of Acme Steelstrap, reduced packaging costs about 50%.

**BETTER!** Acme Steelstrap holds wood members in place and helps protect breather pipes. Steelstrap and two short pieces of strip steel firmly hold engine to skid.

**75% SAVED!** Present cost of packaging Nash engine cylinder blocks with Acme Steelstrap is only 25% of old method . . . labor and material saved!



**MAIL THIS COUPON TODAY!**

Acme Steel Company, Dept. P-87  
2838 Archer Avenue  
Chicago 8, Illinois

Please send me a copy of your case history booklet, "SAVINGS IN SHIPPING."

Name .....

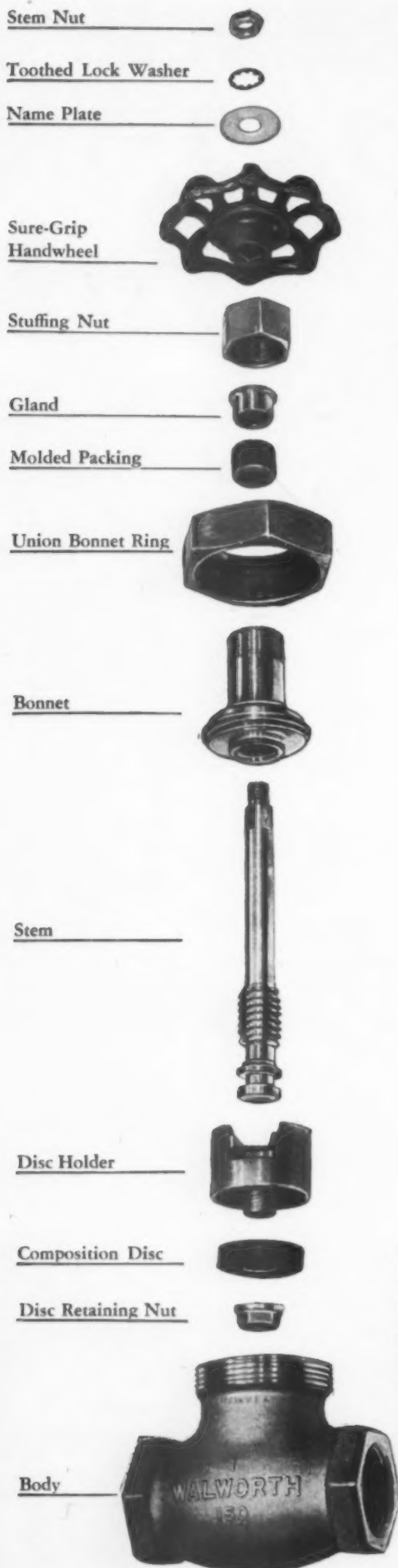
Company .....

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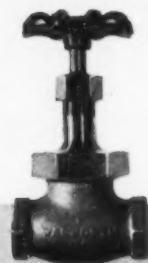
City ..... Zone ..... State .....



**ACME STEEL CO.  
CHICAGO**



## TO MAKE A GOOD VALVE BETTER



**Walworth has redesigned  
and improved its No. 95  
Quality Bronze Globe Valve.**

**150 pounds working steam pressure at 500F**

**300 pounds cold water, oil, or gas.**

**Can be repacked under pressure when fully opened.**

The Walworth No. 95 Bronze Globe Valve has always been tops with piping men because they liked these features: Renewable composition disc; lock-on, slip-off disc holder; union bonnet construction; deep stuffing box; tough bronze body made of Composition M (ASTM B61).

Now Walworth has added these improvements: (1) New cylindrical disc holder that accurately guides the disc to the seat, regardless of the position in which you install the valve. (2) Newly designed, air-cooled, sure-grip handwheel that you can grab and turn, even when wearing greasy work gloves. It has a tapered square hole sized to gage to fit snugly on the finished square of the stem. (3) Toothed lock-washer to prevent the stem nut from becoming loose. (4) All parts have been redesigned to give maximum service and strength.

Walworth Quality Bronze Valves are available in Globe (No. 95), Angle (No. 96), or Check (No. 97) types and in sizes from 1/4 to 3 inches (check valves 1/4 to 2 inches). Ask your Walworth distributor to show you the improved Walworth No. 95 Bronze Valve, or write for further details.

**WALWORTH**  
**valves and fittings**  
40 EAST 42nd ST., NEW YORK 17, N. Y.

**DISTRIBUTORS IN PRINCIPAL  
CENTERS THROUGHOUT THE WORLD**





# Here's Why This *"Handful of Power"* is the Most Widely Used Electric Drill!

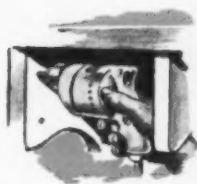


**Easy to Use:** The "HOL-GUN"\* is an easy drill to handle because it weighs only three pounds and is compact and perfectly balanced. Its smooth housings with the famous "Pistol Grip and Trigger Switch" fit naturally into any hand—right or left.

\*Trade Mark Reg. U. S. Pat. Off.



**For Continuous Production Schedules:** This drill has a B & D-built motor with abundant power for *continuous*, trouble-free drilling. Features like splined gear mounting and special ball spindle bearing keep it running under severe operating conditions.



**Drills in Close Quarters:** The Black & Decker  $\frac{1}{4}$ " Electric HOLGUN is an ideal tool for drilling in hard-to-reach places because of its surprising compactness. Measures only  $6\frac{3}{4}$ " overall with short working clearance and spindle offset of only  $\frac{3}{4}$ ".



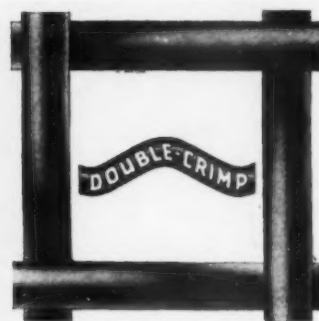
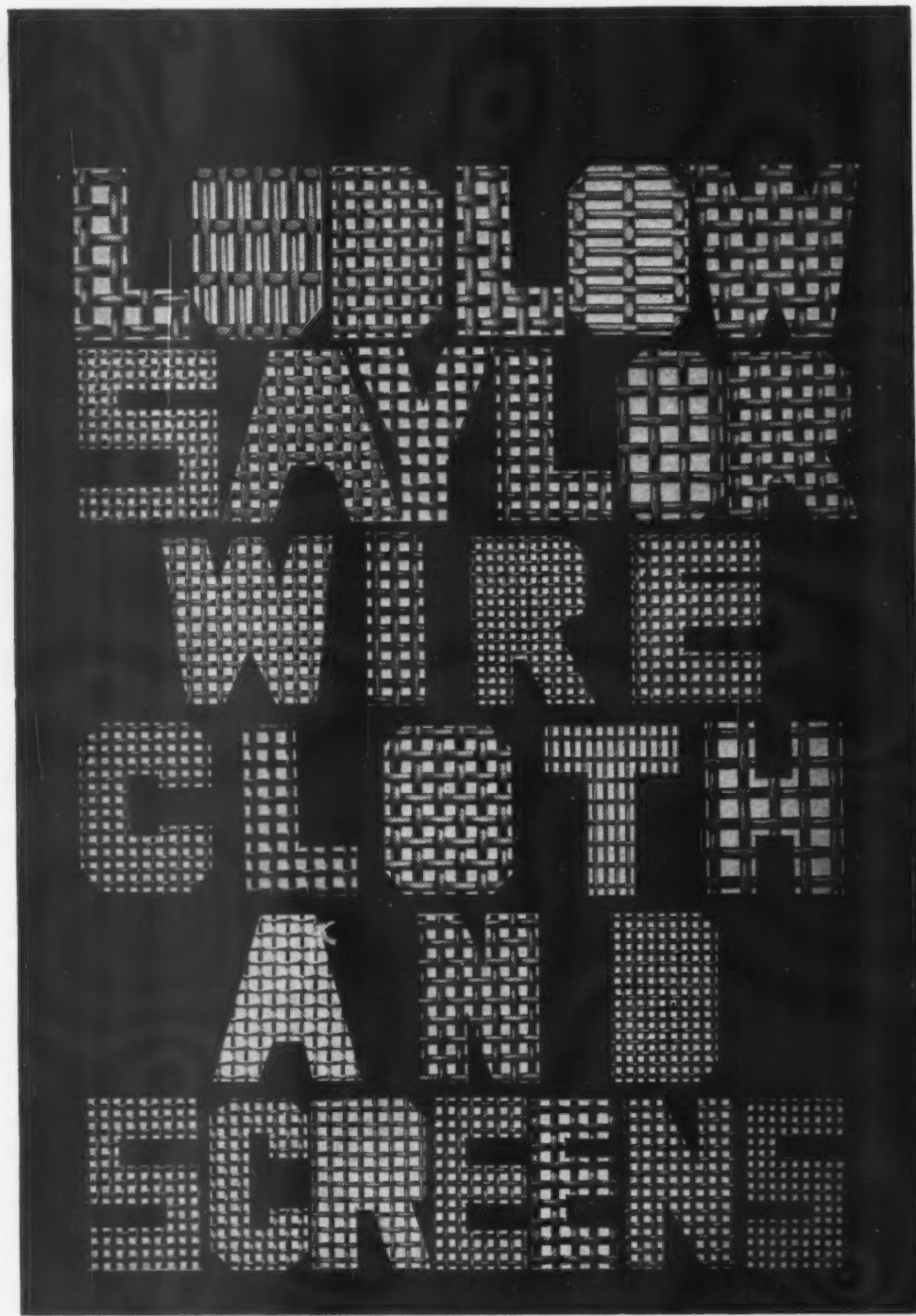
**The Right Power and Speed to Fit Your Jobs:** The HOLGUN lets you pick the correct speeds for drilling in a wide variety of materials. Can be supplied with any of several spindle speeds from high torque at 500 r.p.m. to high speed at 5,000 r.p.m.

LEADING DISTRIBUTORS  EVERYWHERE SELL

**See Your Nearby Black & Decker Distributor** for complete details on this most popular of Electric Drills. For full information on HOLGUNS and many other Black & Decker Portable Electric Tools, write for your free copy of our catalog to: The Black & Decker Mfg. Co., 664 Pennsylvania Ave., Towson 4, Md.

# Black & Decker

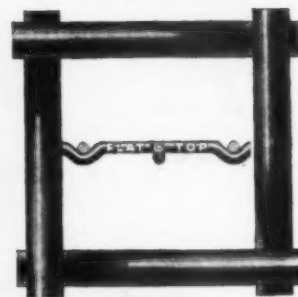
PORTABLE ELECTRIC TOOLS



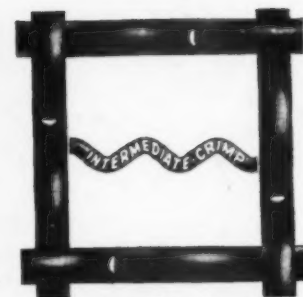
Double-Crimp



Arch-Crimp



Flat-Top



Intermediate-Crimp

## The LUDLOW-SAYLOR WIRE COMPANY

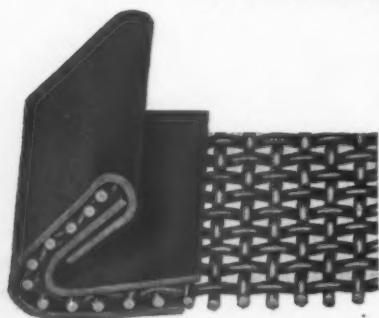
NEWSTEAD AVENUE & WABASH RAILROAD

ST. LOUIS 10, MO.

### SUPER-LOY LIVE-WIRE SCREEN DECKS and JACKETS

Engineered to your exact requirements.

Order Ludlow-Saylor *Engineered* Hook-Strips for tensioning vibrator-screen decks. They transmit to every tensioned wire an equal share of uniform vibration, evenly distributed throughout the entire screen area. They make screen decks last longer—step-up screen capacities—are easier to handle—quicker to install—need fewer adjustments and renewals.

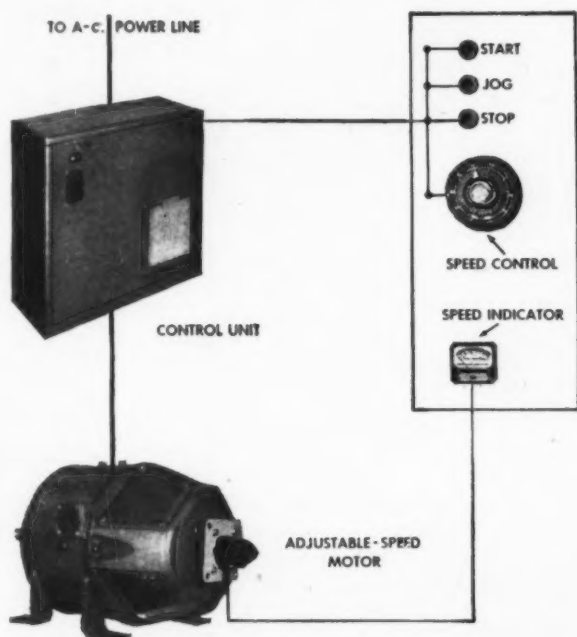




# Greater PRODUCTION with ADJUSTABLE-SPEEDS

*...from A-c. Circuits*

Actually, Reliance V\*S Drive is an *electric transmission*. At the touch of a button your machine can be started or stopped. Turn the knob of a rheostat and it can be accelerated or decelerated smoothly—over an infinite range of stepless speed changes. And with this *All-electric, Adjustable-speed Drive operating from A-c. Circuits*, control can be either automatic or manual . . . at the machine or from remote stations. The net result of V\*S control is greater efficiency, faster production, lower costs—as already proved in every industry. That's why it will pay you to write today for Bulletin 311.



*Conveniently-packaged, space-saving V\*S Drives are available from 1 to 200 hp.*

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# RELIANCE<sup>A.C.</sup><sub>D.C.</sub> MOTORS

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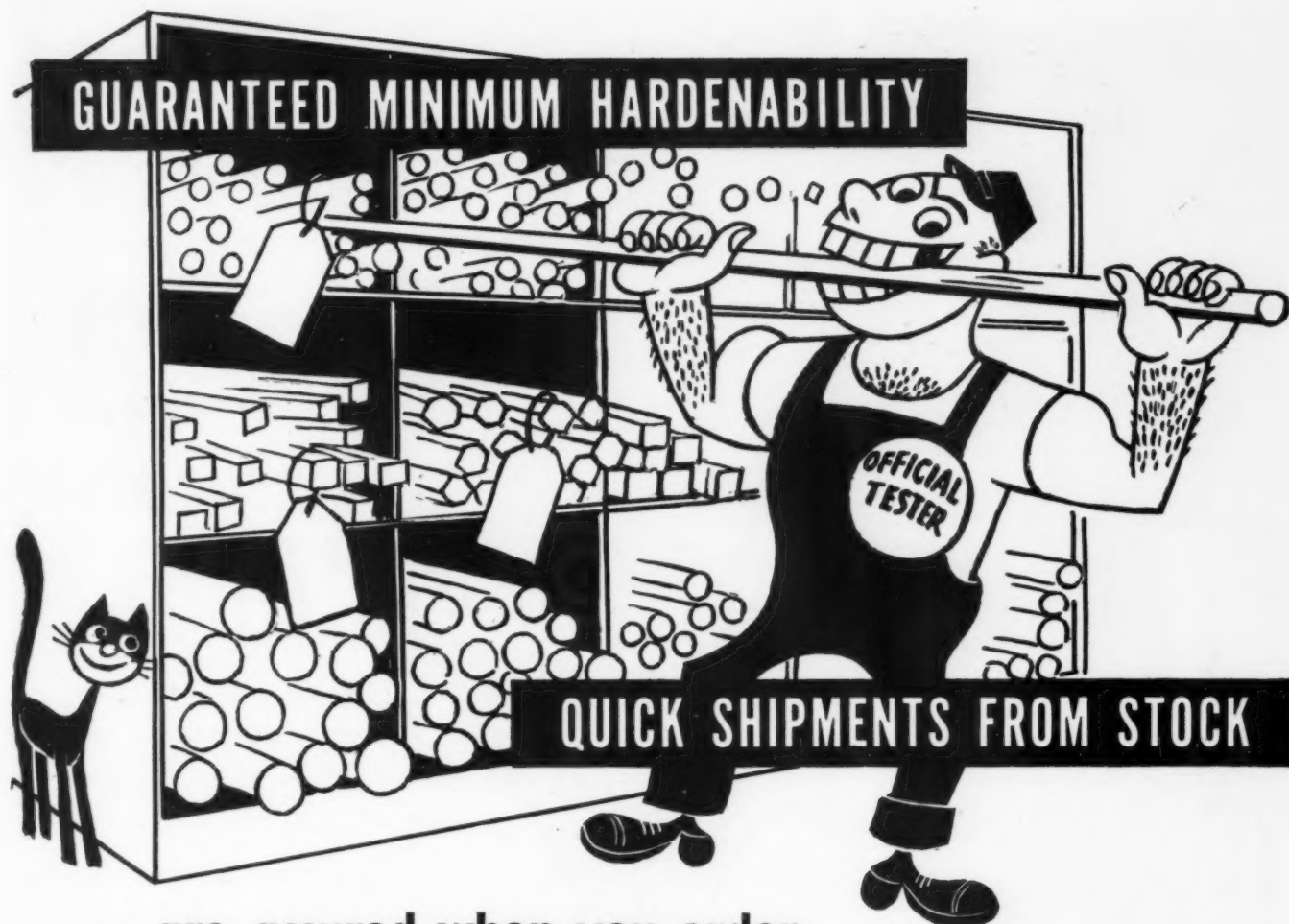
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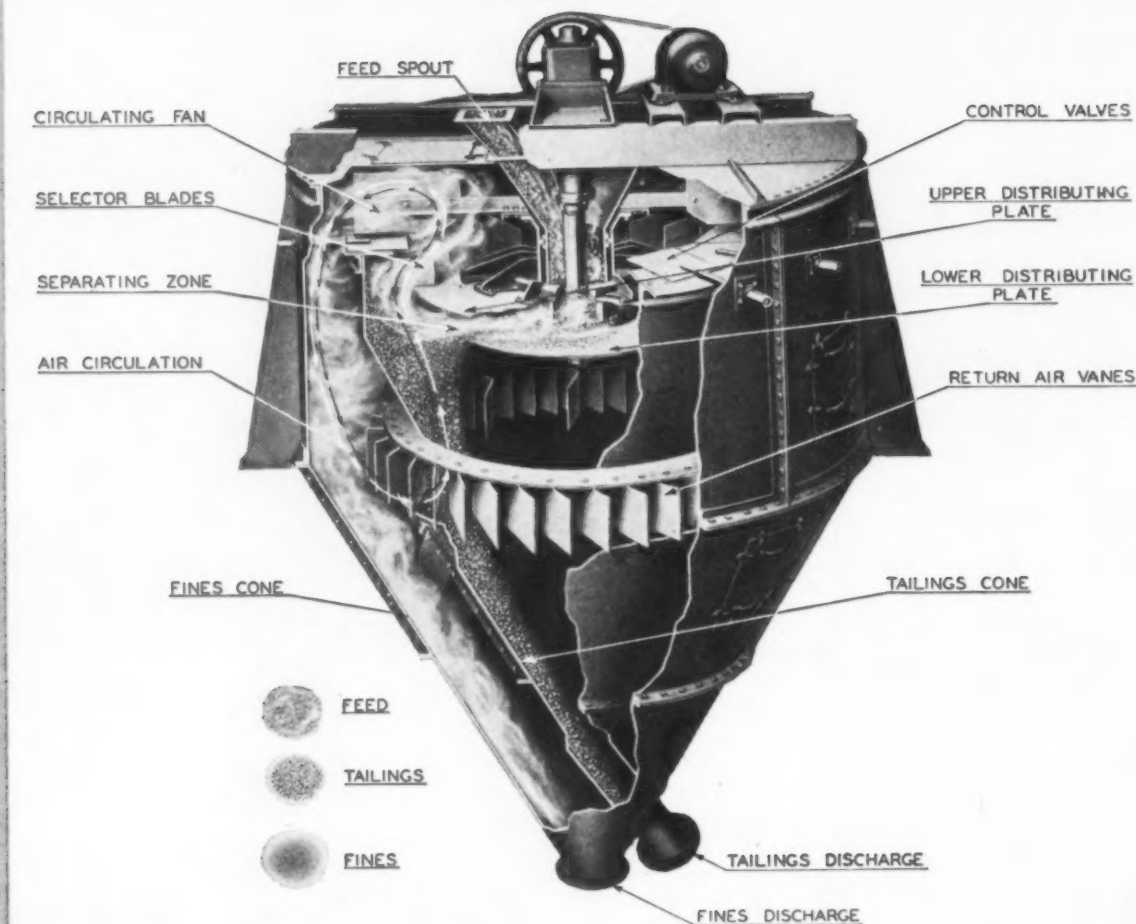
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# UNITED STATES STEEL



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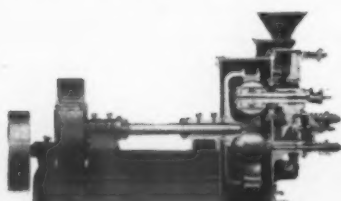
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*Increased 400%*

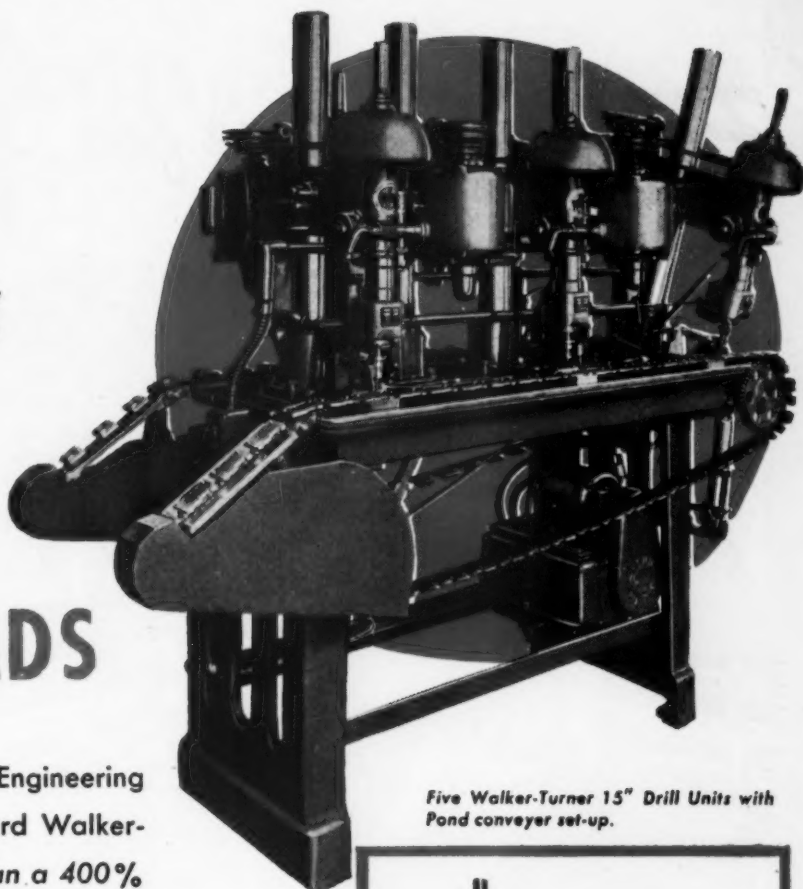
**WITH STANDARD  
WALKER-TURNER**

**15" DRILL HEADS**

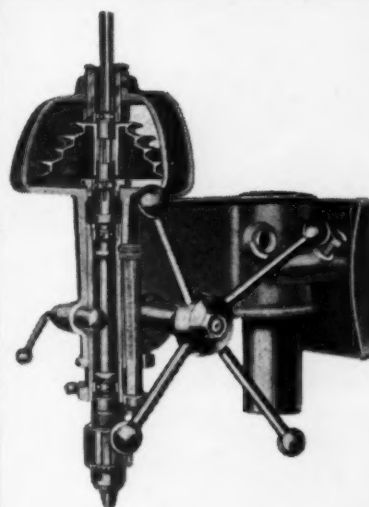
This set-up for tapping, assigned by Pond Engineering Co., Springfield, Mass., and using standard Walker-Turner 15" Drill Heads showed "better than a 400% increase in production over conventional methods."

Two pieces are handled simultaneously, one having three holes to be tapped, the other two. The operator places the pieces on the conveyer plates. The Pond Conveyer and the Walker-Turner Drill Presses do the rest automatically, and finished pieces drip into containers at the other end.

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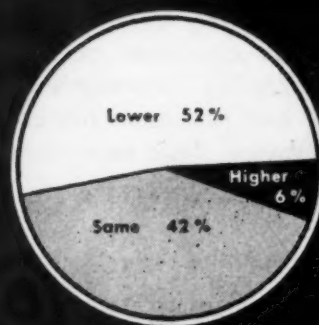
2431 So. Wolcott Ave., Chicago 8, Ill.

# What has happened to QUALITY OF MATERIALS?

*Purchasing agents representing a cross-section of industry in all parts of the country were polled on their opinions and experiences for this PURCHASING survey on the present quality of materials compared with pre-war and wartime quality. The questions, their answers, and a condensation of comment follow:*

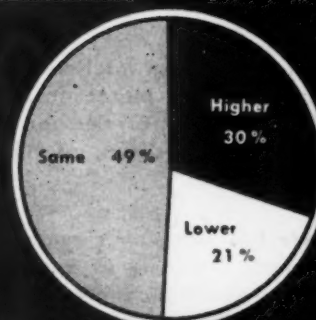
## 1 How does the present quality of the principal materials you buy compare with what you were getting before the war?

Specific complaints are voiced against the quality of some basic materials, although many replies indicate that long-established sources of supply have generally maintained their standards. Pre-war quality is expected to return as supplies get caught up and the "anything goes" spirit lessens.



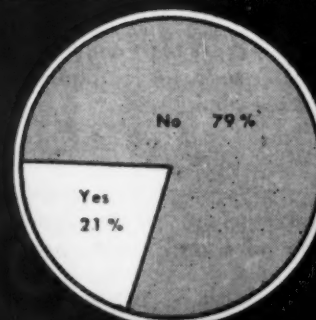
## 2 How does the present quality of the principal materials you buy compare with what you were getting during the war?

"Same" and "lower" replies criticize continued poor workmanship. Higher quality is attributed in one instance to vendors' desire to insure future business. Established suppliers are again mentioned as maintaining standards.



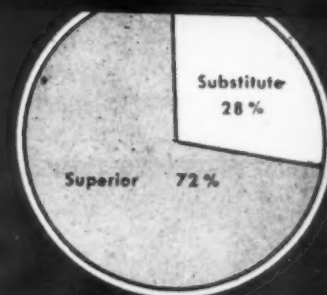
## 3 Are you using to any significant extent materials developed since the beginning of the war?

New developments in plastics, heat resistant materials, chemicals, glass, alloys and textile fibres not available before the war are reported as the outstanding materials in this category now being used.



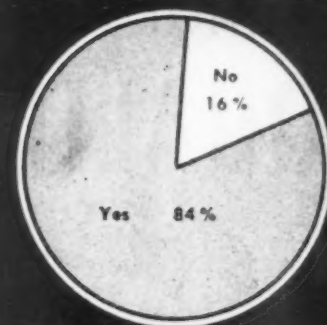


- 4 If the answer to (3) is "yes", is the new product used because it is superior or because the pre-war product is not available ?



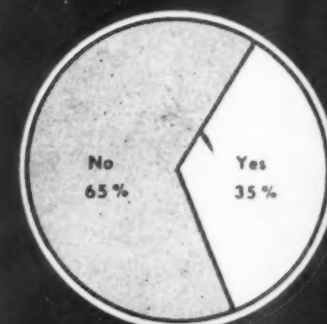
- 5 Are you paying more attention to inspection and testing of deliveries before acceptance ?

Of those inspecting and testing more carefully, many admit that material must usually be accepted anyway because of shortage of supply. Low quality, poor workmanship, shoddiness, and carelessness are described as chief reasons for close inspection.



- 6 Are improved materials now available to you to produce a better product than your pre-war product ?

Experiments and comparisons are limited by shortages, necessity for devoting full time to filling backlog of orders, and incomplete knowledge on consumer acceptance, according to several replies. Improvements in machinery, equipment and processes are credited by several with doing more than new materials to improve products.



## WHAT THEY SAY

"Most materials of inferior quality are due to poor manufacture and inspections. It resolves itself back to the poor labor, carelessness, no pride in accomplishment . . . and so on, ad infinitum."

"There has been no change in our principal raw materials. On some of our principal supply items we are checking quality more closely but due to present supply it is rather difficult to be too particular."

"Both on assembled units and rough material, quality has gone down . . . poor workmanship and careless inspection."

"What is needed is a complete 'hands off' policy by government. Let demand and supply take care of the price and quality problem. There would be

a short and comparatively severe adjustment, then the natural level would be established."

"Material lead time requires us to review each inspection, and if possible without affecting our product, use the material so that production will not be held up, even though it requires extra cost for operation, extra labor, etc. In the main, these costs have to be absorbed by us."

"We find that most of the equipment manufactured by new companies is inferior in quality and workmanship to the merchandise we can obtain from sources of supply from whom we purchased prior to the war."

"There is a general improvement in the qualities of basic materials due to better control of our testing and more carefully written specifications."

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# PURCHASING

The National Magazine of Industrial Procurement

**AUGUST, 1947**

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## HIGHER WAGES -- LOWER VALUE

THE new wage contract negotiated on behalf of the coal miners' union is not linked in any way to output or productivity. From the purchasing viewpoint it represents only a decrease in the buying power of the purchaser's dollar, less value per dollar expenditure, another inflexible cost factor of "floor" that pushes the prospect of possible price reductions still farther into the future. The optimistic predictions of higher living standards through greater value are shattered. It is doubtful that even the miners themselves, direct beneficiaries of the contract, will profit anywhere nearly in proportion to their increased earning power.

The price reactions are immediately apparent — not only in coal, but in steel. Here are two of the basic materials of industry. The projection of this higher price factor is inevitable in regard to all sorts of products in which these materials are used, directly or indirectly. "Absorption" of costs has already reached the saturation point in most lines. And the end is not yet in sight as the new wage "pattern" is eyed by workers in the fabricating industries. The chain reaction has been started. The spiral is on again.

Purchasing men are naturally concerned with costs. They necessarily deal in the objective units of dollars and cents, but they recognize that this measure falls far short of giving a sound answer to their buying problems. They analyze cost in terms of the rightness or fairness of the price, and in terms of the value received. It is no criticism of the rightness of higher wages to point out that value, too, must be considered, and that in the long run value or productivity is the justification of any wage scale.

It would be well if those who are responsible for the economic well-being and balance of our country would also think in terms of value, and would recognize that value entails productivity per dollar of expenditure, whether that expenditure is for materials, or labor, or managerial skill.

*Stuart F. Henrity*

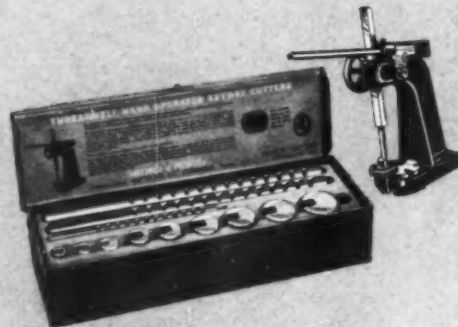


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# HIGHLIGHTS

A brief summary of outstanding features  
of timely interest and importance in this  
issue, to conserve the time of busy readers



Six months ago, in the February issue, we published the complete text of a representative purchasing department manual, in the belief that the presentation of such material as an unabridged unit would have special value to readers. The enthusiastic reception of that article has encouraged us to reproduce in this issue another complete unit from actual purchasing practice. **Purchasing Department Regulations**, on page 109, is a manual of another sort, concerned not with the operation of the buying staff, but designed to acquaint those who call upon the purchasing department for service with the proper procedures in making their requirements known. This document is used at Emory University. Purchasing agents in industrial organizations will find it an excellent model for a similar project addressed to the various operating departments where requisitions originate.

Don't fail to turn to the editorial insert on page 79, introducing the first of a series of monthly reports on purchasing opinion, which will cover a variety of subjects of interest and importance to all purchasing men. In this report we have collected and analyzed a representative cross-section of current experience regarding **Quality of Materials**, a matter of timely concern to the man who buys.

**Inventory Control** is among the top problems of every purchasing department in these times, especially when considered in relation to the necessity of forward coverage of requirements. A practical buyer makes a practical suggestion in the article on page 92, and outlines a plan for working out the answer in cooperation with major suppliers so as to assure a steady, scheduled flow of materials without the danger of receiving topheavy shipments and building up unbalanced stocks with sudden changes in the market.



**Packaging Materials** are the critical factor in many a manufacturing and development program. A careful and comprehensive appraisal of the market situation in relation to probable demand appears on page 94.

This month's guest editorial is by a man who has twice served on the National Executive Committee, and is well qualified to speak of the benefits of **Centralized Purchasing** and on Association activities. On page 89, Grant Clark reports on how the New Orleans As-

sociation has assisted state and municipal officers in establishing sound purchasing principles to governmental procurement, resulting in greater efficiency of administration and substantial savings for the taxpayers.

**Education about Purchasing** is not confined to the courses specifically dealing with buying practice. Practically every text book and every course in marketing and business organization has something to say on the subject, and frequently these comments are at variance with the sound principles of procurement, implanting a false notion of the status and objectives of purchasing among the students of business administration. The article on page 105 sets forth this situation and proposes a means of approach to help correct it.



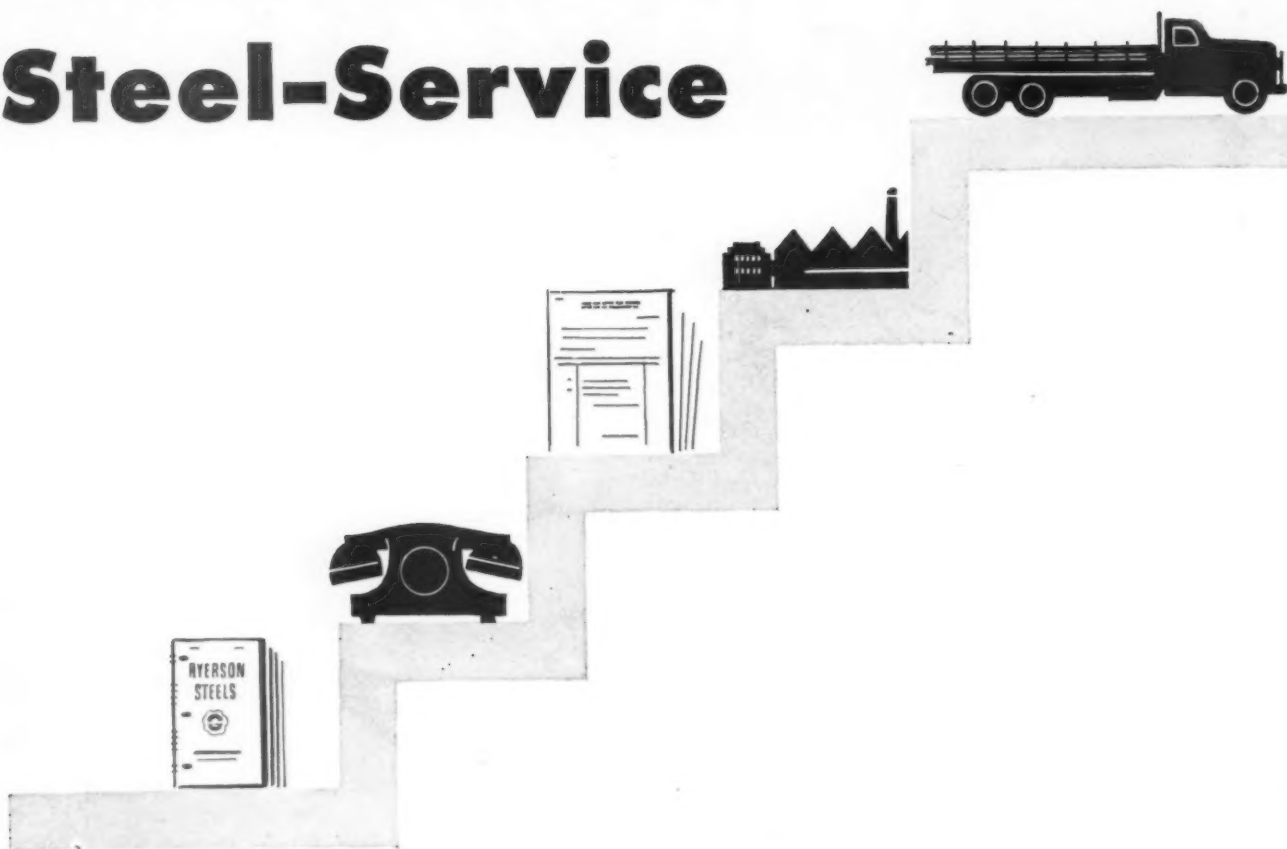
The **Purchasing System and Policies** of one of the leading companies in the meat packing field are described in the article on page 100, another in the series of case studies that tell how the other fellow handles the purchasing job. Turn also to page 138, where the purchasing forms of a railroad purchasing department are reproduced for your inspection.

For a couple of thought-provoking discussions of the importance of intelligent performance of subordinate and routine functions that keep the wheels of the purchasing department turning smoothly, turn to the articles on page 120 and 127. You may want to **Pass These Along** to the attention of your assistants.

Keep up-to-date on industrial products and processes by reading the story on **Lined Steel Containers** (page 117) and that on **Powder Metals** (page 130). The monthly report on **Delivery Schedules** for more than 200 key items of industrial materials, supplies and equipment (page 121) also presents reliable current information needed by the purchasing agent in placing his orders to meet the plant's requirements.

Are you making full use of these monthly departmental features compiled especially to keep you informed on recent industrial developments? A selected list of new **Trade Bulletins and Catalogs** that are yours for the asking (page 14) and the illustrated summary of **New Products & Ideas** now available for the industrial buyer (page 144) will help you to keep up-to-date on these matters.

# Stairway to Steel-Service



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# Centralized Purchasing Serves the Public

● *By A. Grant Clark*

**T**he adoption of centralized purchasing by states and municipalities throughout the country is gaining ground. Information reveals that at present there are 31 states, approximately 300 cities and 100 counties that have adopted this system of purchasing, with others very much interested. A saving of millions of dollars to the taxpayers is being accomplished.

During the early part of 1940 a committee was formed by the Purchasing Agents Association of New Orleans to assist the State of Louisiana in adopting a Centralized Purchasing System. At that time the New Orleans Association was composed of 116 members with a buying power over \$100,000,000.

The services of our Association, as well as the facilities of the National Association of Purchasing Agents, with which the New Orleans Association is affiliated, were extended to Governor S. H. Jones, who was very much interested in saving the taxpayers' dollars.

The committee gathered data from various State, Municipal and Governmental Agencies throughout the nation, and selected information which was of assistance in starting purchasing under the centralized system. In addition to a booklet on "County Purchasing" by Joseph W. Nicholson, City Purchasing Agent of Milwaukee, Wisconsin, and Past President of the National Association of Purchasing Agents, several other booklets on the subject were turned over to the State Department\* for their perusal. The three most important subjects were as follows:

A. Grant Clark is Purchasing Agent and Assistant Secretary of the McWilliams Dredging Company, New Orleans. He has been associated with the company since 1920, settling down to a successful business career after several years of seafaring experience which took him to virtually every important port of the North Atlantic. Trained at the Harvard Radio School, he served throughout World War I in the United States Navy as radio operator aboard armed guard vessels. Receiving his honorable discharge in 1919, he continued as an operator in the Merchant Marine, visiting England, France, Germany, Scotland, Denmark, Sweden, Canada, Mexico, the Azores, Bermuda and Panama before making New Orleans his permanent home port.

He has been an active member of the New Orleans Purchasing Agents Association for many years, served as President of that organization, and has twice been chosen as Vice President of the National Association of Purchasing Agents for District No. 7—in 1942-1943 and again in 1946-1947, a tribute to his excellent work in that position and indicative of the high regard of his associates in purchasing. The period of his service in national affairs has witnessed the tremendous industrial growth of the South and its increasing importance in the economic life of the nation. During his first term on the National Executive Committee, he represented four widely scattered and relatively small Associations. During the term just concluded, his District comprised seven active groups in the Southeastern area: the Alabama, Chattanooga, Florida, Georgia, Louisville, Memphis, and New Orleans Associations.

The interest in sound governmental purchasing procedures expressed in this article is typical of his active and practical interest in a wide variety of civic projects. He is Secretary of the Light House for the Blind, a self-supporting institution in his city, and for many years has participated in the affairs of the Delgado Central Trades School. He is a member of the Board of Directors, Propeller Club of New Orleans; member of the Purchasing Advisory Committee for the City of New Orleans; member of the American Legion and various other civic-minded organizations.



1. Centralized Purchasing.
2. Organization and Administration of a Government Purchasing Office.

3. Purchasing Laws for State, County and City Governments.

All of the above articles are by Russell Forbes, formerly Commissioner of Purchase for the City of New York, and Consultant on Governmental Purchasing for the National Association.

In June, 1940, Governor Jones appointed a State Purchasing Agent for handling purchasing for practically all State Departments. Since that time large savings have been made, and the purchase of every known commodity for the operation of State farms, penal institutions and hospitals, including furniture, printing, stationery, office supplies, live stock, and timber are handled. The department is headed by Glenn R. Rumbaugh, State of Louisiana, Department of Finance, Room 211, Capitol Annex, Baton Rouge, Louisiana.

Mr. Rumbaugh was appointed by Governor Jones, and is still head of this department. He has done a splendid job, and has saved considerable money for the State.

Exactly six years later, in June, 1946, another committee, appointed by the New Orleans Association, contacted the heads of the City of New Orleans, recommending the establishing of a Centralized Purchasing System, and the matter was placed in the hands of Lionel Ott, Commissioner of Finance, for further study. Commissioner Ott became very much interested, and called several meetings with our committee to work out plans for the adoption of such a system, co-operating with the committee 100%. The position of Purchasing Agent for the City falls under the Civil Service, and this department immediately requested our committee to assist them in securing applicants for this highly important position, and also to prepare questions for the examination of such applicants. Notice was sent out to a large number of qualified persons, and the results, after the examination, were the qualifying of three outstanding applicants who were further questioned by the committee for recommendation to the City. The three men who qualified were all outstanding, and after further consideration by Commissioner Ott, George R. Bosworth, a graduate of Spencer's Business College, formerly Assistant Purchasing Agent for United Fruit Company, Stand-

ard Fruit and Steamship Co., and Reilly-Benton Co., was appointed.

Mr. Bosworth, born and reared in New Orleans, an outstanding citizen, took office on October 1st, and started immediately to correct the evils of the past. The Purchasing Agents committee was officially appointed by Hon. de Lesseps S. Morrison, Mayor of our City, as an advisory committee to the Department of Finance. Members are:

Emile L. Morvant, Purchasing Agent, Realty Operators, Inc., Chairman.

Robert N. Dowling, Director of Purchasing, New Orleans Public Service, Inc., and National Director of the New Orleans Association.

E. A. Schlesinger, Jr., Vice-President and Director of Purchasing, Gulf Engineering Company, and President of the New Orleans Association.

Stanley L. Mayo, Purchasing Agent, Freeport Sulphur Co., and Vice-President of Association.

Rene H. Garrot, Purchasing Agent and District Manager, Maritrop Trading Corporation.

A. Grant Clark, Purchasing Agent, McWilliams Dredging Co.

Messrs. Clark, Morvant and Garrot were members of the earlier committee which was responsible for the starting of the State Centralized Purchasing System.

At the suggestion of our committee, an invitation was extended by Mayor Morrison, through Mayor John L. Bohn, of Milwaukee, Wisconsin, requesting permission for Joseph W. Nicholson, Purchasing Agent for the City of Milwaukee, to visit our City to make an inspection of the present purchasing system with a view of making recommendations on how the system can best be improved.

On Monday, December 3, 1946, Joseph Nicholson came to New Orleans, and immediately conferred with Finance Commissioner Lionel G. Ott and George R. Bosworth, the newly appointed City Purchasing Agent. Mr. Nicholson estimated that by intelligent administration a possible saving of 10% to 15%, or approximately \$300,000 per year, would be made under the centralized purchasing system. He further explained that following his study of the City's purchasing methods, he would prepare a detailed report on a long term basis, including recommendations, to the City Administration.

Mr. Nicholson has been with the City of Milwaukee since 1923, and during World War II was Pur-

chasing Consultant to the O.P.A. and the W.P.B. He has assisted in setting up centralized purchasing in nine other cities, all of which have profited substantially.

While New Orleans has officially adopted a centralized purchasing system, it is in its infancy, and Mr. Bosworth realizes the task he has before him to prove that it is the only system of purchasing for the city and the state to follow. Such a system will result in the elimination of waste on smaller purchasing, and in a benefit of lower prices on large purchases.

On December 5th, Mr. Nicholson addressed members of our Association, the Commission Council, business and civic leaders of our community. The meeting was well attended and brought out members who are rarely seen at our regular monthly meetings. A number of these members, along with others, offered their congratulations to the committee for doing such a splendid job in an attempt to improve the purchasing department of our City.

A large number of members of our Association do business with the city and state. Very few, in the past, have been given even the opportunity to bid on furnishing material and supplies. Under the centralized purchasing system, they are now participating, and our committee has received several calls from numerous concerns stating that they are now enjoying business which they were denied under the old system.

Mr. Nicholson's address was well received. Several illustrations of transactions effecting savings by various city, state and municipal government bodies were given, as well as a number of factors which should be considered to operate an efficient public purchasing department. Mr. Nicholson spent approximately one week in our City reviewing the system now recommended. His report to the Mayor includes specific recommendations to assist in operating a department to purchase material and supplies at a large saving to the taxpayer. This can only be done by handling the job with the right man at the helm. Our committee is supporting Mr. Bosworth 100%, and we feel that he is well qualified to do a splendid job. The New Orleans Association is proud to contribute toward such an outstanding improvement. Mr. Bosworth is to be congratulated on the splendid progress that he has made since taking office October 1st, 1946.



# Pages From a Buyer's



## Notebook

### SHARE THE KNOW-HOW

A recently published news item tells of awards made to employees by one manufacturer for suggestions on cost-saving procedures. Among the examples cited was rather a substantial award for a new idea in carload packing, representing a potential saving of several thousands of dollars over the course of a year.

It seems to me that a smart purchasing agent under those circumstances would do well to pass the suggestion along to his suppliers, with the thought that it might help them too in reducing the cost of the materials or products that he purchases from them.

Perhaps he wouldn't get the direct benefit of a price reduction, though in the long run it is certainly to his advantage to have his suppliers' operations on an efficient, low cost basis. It is fairly obvious that in strengthening the position of his supplier he is strengthening his own supply line. At the very least, it would prove to be an effective way of building good will and better commercial relationships, and these are an important factor in good purchasing.

Initiative can and should be capitalized as a competitive advantage, but there are many ideas of this sort where everybody wins by sharing the know-how of greater efficiency.

### SMALL LOT STORES

A great deal of our material trouble in the past was caused by difficulty in obtaining small components. Frequently we would not know that we needed these items until a few weeks before it was necessary to use them. Consequently we would spend many man-hours and much money to procure a relatively unimportant item which might be holding up a very large job.

These items had not been stocked because their activity was too small and too irregular to justify stocking according to normal standards, but the dollar analysis indicated that we would be much better off to carry some of these in stock and take a high write-off due to obsolescence and have a very slow turnover. We decided that if we could turn stock over on the average of once a year, and not write off more than 25%, we could save money.

When we set up the account like this, we kept records of costs and savings. We learned that at the end of the year we could throw the entire stock away and still show a net saving in dollars. This saving was computed without reference to the cost of delays in production which were eliminated by having material available. Now we carry in stock everything we expect to order as often as three times a year, provided that the dollar value of annual usage does not exceed \$100.

### COSTS AND PRICES

Price data is always more convincing when it is supported by cost figures, but we are seldom taken into the supplier's confidence to this extent. A guess or broad generalization is not satisfying. There is much to commend a policy of frankness such as that shown by the Porter-Cable Machine Company in a recent letter to its dealers.

This letter states that "46% out of each dollar of Porter-Cable sales is spent for materials purchased from outside vendors, and material costs have gone up since January 1, 1946, as follows: integral motors, approximately 45%; fractional motors, 30%; grey iron castings, 31%; aluminum castings, 15%; abrasive material, 27%; pumps, 15%; cutting tools, 17%; V belts, 17%; cord sets, 18%; switches, 14%; steel parts, 20%, etc. Labor rates increased 75% since 1939."

Against this tabulation of costs, the increase in product prices, ranging from 7% to 13.5%, does not seem out of line, and there is real significance to the company's claim of holding that line through "improved methods, new machines, automatics, higher speeds, improved fixtures, straight line production and assembly methods, and streamlined administrative procedure . . . to absorb a large percentage of the increased costs."

It is probable that many other companies have a similar story to tell. Most buyers would react very favorably to the telling.

### BLACK MARKET BUYERS

It has long been a favorite theme among buyers to point out that a purchase and sale together constitute one identical transaction, differing only in the point of view. Whenever a sale is made, somebody buys. No purchase, no sale.

We have used that argument to establish the importance of the purchasing function and operation in business, to deflate the emphasis that is customarily placed on sales achievement to the disparagement of other phases of business, and otherwise to enhance the standing of the buyer.

Isn't it time to recognize that in taking this credit for doing a job, we must also accept the responsibility for doing the job right? We hear a lot of griping these days about black market operators in steel and other commodities, and we have contributed loudly and emphatically to this criticism. Justly so. But the fact remains, if there were no black market purchases, there would be no black market sales, and just as long as there are black market buyers, that market will continue to exist.

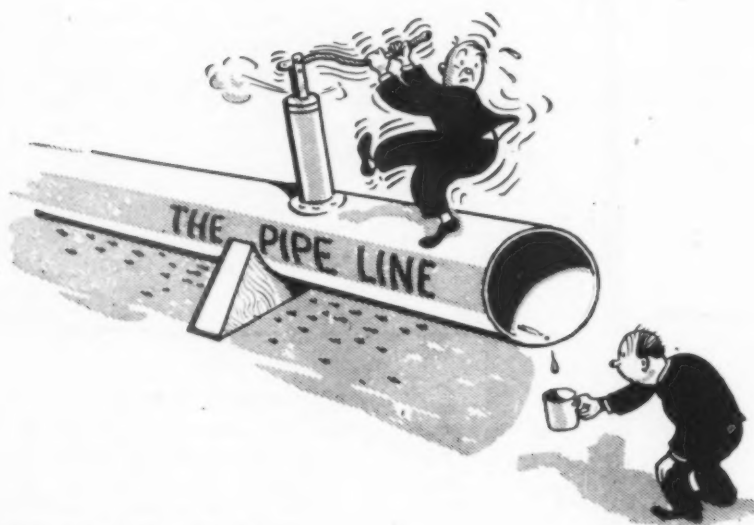
Of course such buyers are not typical of their profession. But neither is the black market seller typical of marketing practice. He is the sore thumb of distribution, conspicuous because of that very fact. Legitimate suppliers are trying to eliminate him from the picture. The most effective way of accomplishing that is to eliminate the buyer who patronizes the black market.



# SELL YOUR SUPPLIERS ON

Unbalanced inventories and open commitments are like a time bomb set at the foundation of the business structure, and shortening delivery schedules are the warning signal that the lighted fuse is dangerously short

We can have stability instead of recession if buyers and sellers will get together on sound long-range policies of steady supply



## ● By B. D. Henderson

Purchasing Agent  
Westinghouse Electric Corporation Sharon, Penna.

**T**HE severity of the next industrial boom-or-bust cycle may depend upon the ability of Purchasing Agents to sell their suppliers on sales policies which will permit the maintenance of low inventories. Today, the industrial Purchasing Agent has perhaps the greatest opportunity and the greatest responsibility of the last twenty years. Within the next twelve to twenty-four months the individual Purchasing Agent can prove his right to management status or fail and be a major contributor to business distress.

Large unbalanced inventories acquired at high prices have always been characteristic of periods of very high business activity such as the present. In the past, the sequel

has always been acute distress for buyers and sellers alike. Yet, the consequences may be avoidable even if the inevitable reduction in business activity eventually does come.

### *The Cycle of Supply*

Trace the pattern of events and keep 1921 and 1937 in mind. As business activity approaches high levels, the capacity of many suppliers becomes inadequate. Simultaneously procurement times increase rapidly, delivery promises become undependable, finished goods stocks of suppliers are exhausted. This happens at the time when users are increasing production and users' inventories are nominal. The filling of the production pipe line is

a major factor in the tightening of supply.

Requirement forecasts six, ten and fifteen months in advance are much less accurate than short term forecasts. Naturally, the requirements are estimated upon the safe (high) side. Under the enveloping flood of orders and the mounting pressure, suppliers naturally sacrifice scheduling accuracy for maximum production. This introduces an additional uncertainty to be discounted by larger inventories and even more generous safety factors.

At this point there appears one of the great paradoxes. Just when material is in the shortest supply, raw material inventories start climbing rapidly. The burnt child fears the fire. Once a short item is rescued, the stock is built to super-safe levels on that item. At this stage the trade papers begin reporting inventory increases and badly balanced stocks.

### *The Readjustment*

This can't go on forever. But the readjustment usually takes place long before it is fully recognized. Less desirable customers are sacrificed by suppliers. There is usually a sharp testing of customer-supplier relationships, but in spite of this suppliers take care of bread-and-butter customers, and supply approximately balances requirements.

Unfortunately, this doesn't stop inventory accumulation. Lead times are still extended, suppliers' promises are still only approximate. So the inventory is allowed to accumulate until one day suppliers begin to ship some items well ahead of schedule.

This is the last time that the situation can be saved. If by this time no brakes have been applied, it is too late. The landslide can't be stopped.

### *Lead Times Shortening*

In our plant in November 1937, we were faced with a shutdown because of a shortage of certain sizes of steel. Six weeks later we had received 140 carloads within ten days, more than we could unload at once and more than we use for many

# INVENTORY CONTROL

months. The same thing is happening today on certain items. A purchasing friend of mine received six months' scheduled supply of lumber in a single day not long ago.

Here is what happened. The overly generous estimates of requirements are revised when production levels off. Previous over-estimates begin to show up in inventory. With heavy inventories on hand, the Purchasing and Stores Departments boldly eliminate any duplication and go further, trying to reduce receipts below usage. Suppliers get cancellations as a consequence. But the supplier who struggled for a year and a half to get production up is reluctant to reduce it just when he has the wheels really greased.

Then the chain reaction really starts. The supplier grasps the heaven-sent opportunity to catch up on his overdues. He ships some poor devil all of his overdues, the current schedule and some of the future schedule. That unfortunate fellow who had just been able to get his shortages under control is now glutted. He is surprised and pained and he cancels his unshipped balance in order to work off this extra stock.

Like a pricked balloon, lead times and backlogs collapse. Pity now the unfortunate Purchasing Agent who has a big commitment. He gets it all at once. A cancellation or a hold gets a "Sorry but the material is in process and cannot be stopped unless you will accept cancellation charges."

## Recession is Avoidable

The cycle is complete—almost. Since procurement time is short, inventory can be replaced promptly and a small stock is quite safe. The large unbalanced stock must be deflated and balanced. That means no new orders for quite a while; so business is suddenly bad. We called that period a "recession" last time.

If nothing could be done about this, there would be no point in discussing it. But it is avoidable. In every plant a relatively small number of suppliers furnish a majority of the dollar value of material. Come

to an understanding with these few suppliers, and you can almost let the rest of the material ride.

If you are a *salesman*, you can show your supplier that he has a bigger stake in this than you have. Every dollar of material he can help do without now permits him to take care of another customer that he will need later. Even more important, it assures him that you will be able to buy material when he really needs business.

## Assure Supply

I have on my desk a half a dozen letters from suppliers all of which say about the same thing: "We have a nine months' backlog and we suggest that you place your orders immediately for the fourth quarter hence." I'll do it if I must in order to assure supply. But in every case I have twice as much overall stock as I expect to carry indefinitely even though I am short of certain items. For each of these suppliers I have a list of open orders showing the material scheduled for each month for the next year. Within 30 minutes I can cancel every order past their procurement time, if their procurement time should decrease.

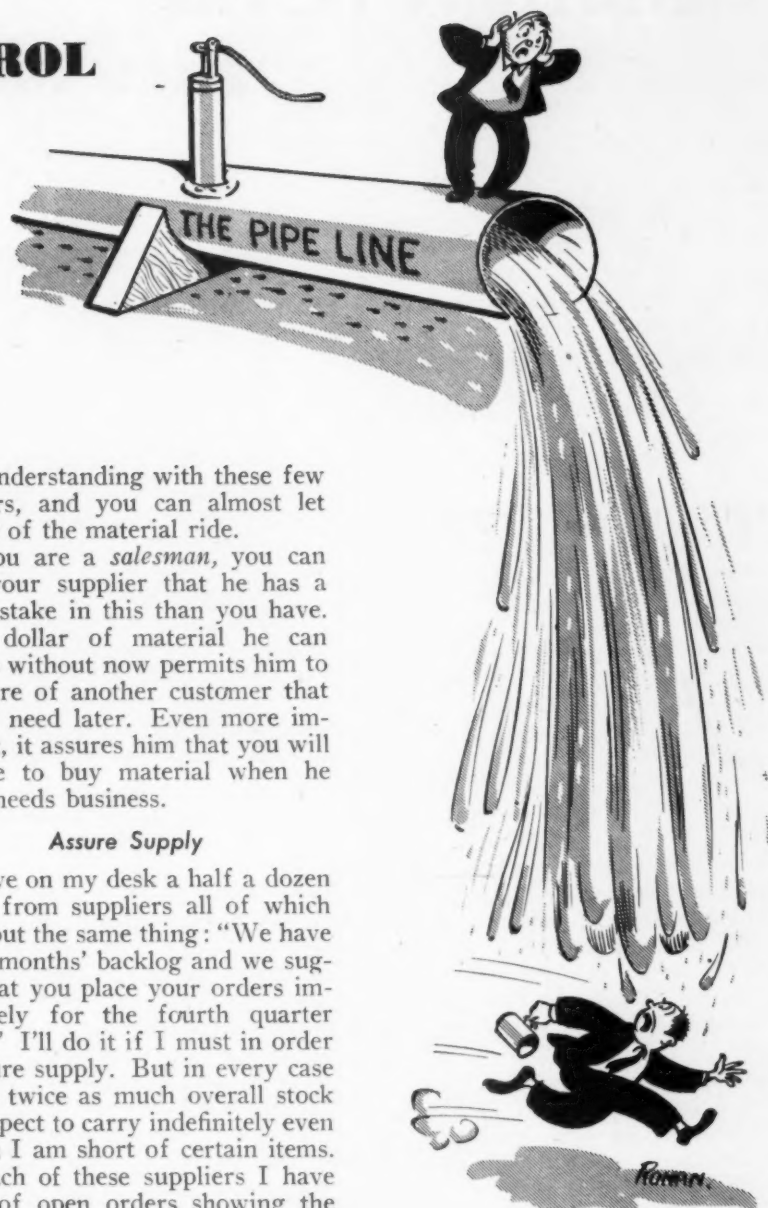
That open commitment is a loaded pistol pointed at my head. But for our supplier it is a time bomb. It might be compared to a tank of gasoline. Burned under control, it is the source of abundant useful power. Exploded all at once, it can cause a catastrophe.

If you have a major supplier who is furnishing you now a sufficient total *quantity* but who requires long lead time with inaccurate schedule performance, you must come to an agreement with him which will permit you to safely carry a minimum stock. This means that he must reserve sufficient capacity for you to meet your needs and permit you to give him releases or schedules a

minimum time in advance of actual manufacture. Specifically, he must permit flexible scheduling by his major customers. If you are a salesman, you can sell this.

Sell this story and you help us all. Sell this story and you take the sting out of a minor business setback. Sell this and you increase your supplier's profit and lend stability to his business. Do this and you save yourself potentially drastic inventory write-offs.

In the meantime, review for yourself the daily shipments received ahead of schedule. These early shipments are the Geiger counter that can tell you how close an explosive chain reaction may be. Start selling now and keep it up.



# CONDITIONS IN THE PACKAGING SUPPLY FIELD

**By Loy W. Ledbetter**

General Purchasing Agent  
Ralston Purina Company  
St. Louis

**T**HE buyer of packaging supplies hasn't much hope for improvement in availability and lower prices in the packaging field in the months immediately ahead. The serious shortages of raw materials for the packaging industry have shown little change during the past 12 months. The seller has had complete control for many months and it now appears that he will continue to have control for some time.

There has been an increased demand from manufacturers who are planning expansion programs—for new products as well as old ones—and many have been forced to abandon or postpone their plans because of continuing shortages. Manufacturers of the packing materials, too, have had to postpone expansion programs because they have been unable to obtain basic raw materials with which to supply fabricators. This has prevented many new packaging developments from being offered to buyers of packaging.

Most packaging costs will remain high because labor costs will not permit a reduction. In some fields, there may be further increases. In others, there may be some reductions in costs and an increased supply as the channels of distribution fill up and certain demands are satisfied.

In view of these difficulties, manufacturers of package merchandise have a serious problem. Because of the large potential demand for their products, they would like to have new packages and new products at lower cost. But facing them is this shortage of materials and increased costs. They must therefore study their present production, continue to standardize, to utilize to maximum use materials available, and plan all economies possible. The manufacturers in the



Every supermarket provides dramatic evidence of the basic requirement for packaging materials — glass, tin, cellophane, paper wrappers, folding boxes, and cartons.

packaging supplies field have done an excellent job in providing enough supplies to satisfy the necessary demands.

In considering these major products, the most important is Paper and Paper Products.

## **Paper and Paper Products**

The transition year from war to peace-time operations was 1946. The Paper and Paper Products Industry should be given the highest praise for the great job they did in this reconversion period. The handicaps of labor-management difficulties, shortage of raw materials and repair parts, and many others were overcome to the extent that the industry made the change-over and was able to have a record year of production. The production levels so far in 1947 are higher than in 1946.

For the balance of 1947 and possibly through 1948, the demand for paper and all paper products will continue on about the same levels as in 1946. Experts in the field of economics feel even though we have a recession from the 1946 level, it will have only a slight effect upon pulp, paper, paper products, and paper board. A recent report of the U. S. Department of Commerce stated:

"The prospects for a continued heavy demand for paper and paper board are based upon several considerations. First, there is a great demand to satisfy the basic needs and uses which vary in proportion to the level of economic activity. Second, there is the demand arising from the development of new products by industry in recent years, such as converting papers, building materials, frozen food containers, paper milk bottles, and many others. Third, there is the demand for further replacement of inventories depleted during the War."

Certainly all of these demands were not satisfied during 1946, and will not be in 1947 with the continual increase of consumer demand in the general economic level of today.

It is the general belief that during the balance of 1947 and the first half of 1948 there will be no curtailments of present production due to labor troubles or decrease in raw materials. It is estimated that because of a more favorable labor supply and some increase in raw materials, production will rise. If the manufacturers continue the program of rebuilding present equipment to make it more efficient, and continually seek better and more efficient methods for increas-



ing production, as in 1946, with new plant and machinery installations, it is estimated that paper products will be increased by two million tons.

Even with this increase, there will not be sufficient paper and pa-

are recovering and gradually building themselves up for the tremendous demand that the postwar period is generating. Container board production in the first three months of 1947 set new peak levels. This includes all grades of board, such

from an availability standpoint, is considered better today than any time during the last five years.

The production of Jute container board in mills using chiefly waste paper stock and other furnishes other than 100% Kraft pulp will maintain high levels of production through 1947. Present reports show that a sufficient inventory of waste paper can be maintained to guarantee maximum production. The primary problem is to secure sufficient Kraft pulp to go with waste paper stock. The problem will continue with the uncertainty of importation of all grades of pulps.

The production of .009 straw and other corrugating material seems reasonably easy to permit the current rate of container production.

There is one phase of container board production which may have a very important bearing on future production. In order to accomplish the present rate of production of container board, there are a number of mills manufacturing board today which do not operate under normal demand conditions. These standby mills account for 20% to 30% of current production. These mills are high operating cost mills and if and when we approach a normal market, it is very likely they will cease to operate on container board. In the face of such unprecedented production, the obvious question is, "Why the shortage of containers?" The answer is, "The demand far exceeds the supply".

It is very difficult to say when we will have a balance between supply and demand of container board and shipping containers.

L. W. Ledbetter



Mass distribution of the products of reconverted industry calls for an increased supply of shipping packages.

per products to meet demands, and allocation by the manufacturers to their customers will continue.

The industries supplying the packaging field have risen to a new level of production higher than in any pre-war year. The many war-developed products, machinery, and research have opened new fields for civilian use, and with continued research they will increase the demand of all types of products in packaging field.

#### Shipping Containers

The total production of boards of all types in 1946 was 9,431,941 tons, which was 6% higher than in 1945. Of this total tonnage, shipping container board was 51%. Expansion programs now being planned and in course of construction should increase the total tonnage to about 1,400,000 tons of new paper board capacity, according to a survey made by American Paper and Pulp Association.

The Container Board Industry and fabricators of shipping containers of all kinds are just now recovering from the war period, during which time this industry was declared unessential, all labor was frozen, and they were unable to obtain needed equipment. They

as Kraft and Jute Liners, Straw, and Chestnut Container Chip used in manufacturing of shipping containers. It is believed that this present high level of production will continue throughout 1947 unless the scarcity of some items becomes worse.

The major problems of the Kraft Mills operating in the South, which are the chief sources of container board, are the shortage of freight cars and certain basic chemicals. If the present program of building freight cars at a rate of 10,000 per month is carried through, this will help insure full production of pulp and board mills. However, the continuing shortage of Salt Cake and Soda Ash is causing a very acute situation and may get worse. If this occurs, Kraft production may have to be curtailed. Assuming that both of these conditions will become normal, it is estimated that the Kraft production of approximately 40,000 tons per week can be maintained throughout the balance of 1947.

Wood shortage and labor shortage, which were very critical during the War, have been overcome. Most of the Pulp Mills have been able to accumulate substantial wood inventories. The labor situation,



Many industries have not been able to accomplish their reconversion program to their full extent, and if they are completed in 1947, the heavy demand for containers will continue. Some industries may relax their demands, and it is definitely sure that there are some who are building large inventories. However, when these stop buying, there are many new industries that will want to enter the market and can assume these tonnages.

The picture of short supply and high prices in container field can change quickly as in any other industry, but it is unlikely that this will occur. However, all container buyers should watch this picture very carefully. Heavy inventory accumulations should be avoided, thereby keeping losses at a minimum should the picture change and a buyers' market return.

#### **Folding Cartons**

The production of bending board for the manufacture of folding cartons is, as in container board, the highest in the history of this board production. Box board represents about 30% of the total production of 9,000,000 tons produced in 1946. The needs of carton board continues beyond the supply available and most of the users of carton board will continue to be on allotment basis.

Waste paper, one of the most important products used in the manufacture of box board, continues to be fairly plentiful and indications are that this supply will be adequate. However, the finer grades of waste paper—sulphite pulps—used in the manufacture of Patent Coated and Clay Coated boards is very critical. The importation of foreign pulp has been estimated to be less this year than in 1946. This will have a definite bearing on the supply of folding cartons.

The purchase of pulp mills by some of the large publishing companies has reduced the tonnage that formerly went into carton manufacturing. On the other hand, there has been some tendency for independent mills to purchase independent box plants, which should help increase the production of folding cartons. Being integrated, the mills will naturally supply additional box board tonnage.

Some experts believe that there will be an increased demand for cartons for at least two years. This is based upon the new developments and new products, some of

which have not been fully explored. Many, however, are ready to go as soon as carton tonnage is available. Others believe, however, that some time in 1947 we may see a leveling of supply and demand in this field. When suppliers are able to make deliveries on a more normal basis, buyers will reduce commitments.

It is certainly hoped that the price structure of cartons has reached a peak. The heavy increases in the price of pulp, labor costs, and shorter hours in printing plants, chemicals, etc. have made it very difficult for many buyers of folding cartons to recover these heavy increases. The Carton Industry is preparing many improvements for the carton users. Considerable research has already been finished.

Many integrated mills are installing machine clay coating processes whereby the coating is applied at the same time the board is made. This process will provide, at a lower cost, a finer printing board than the old processes of separate coating. The ink manufacturers have developed new inks to give finer printing results on these new coating processes.

#### **Paraffin Cartons**

The demand for paraffin cartons has increased approximately 30% since 1939. During this period the price has increased approximately 35%, and there are indications that an additional rise may be coming soon. The situation in this field is about the same as in all other paper products: the demand is greater than supply. Butter, shortening, margarine, lard, and ice cream are the most commonly known products requiring paraffin cartons.

The key to problems in paraffin cartons is the paper board and pulp. Board required for paraffin cartons must be a sanitary board.

During the War period and at present, because of the scarcity of pulp, manufacturers had to abandon a solid bleached sulphite sheet and go to a sulphite lined manila. The cost of bleached sulphite pulp today is about the same as finished sulphite board before the War. Prices have been increased because of the heavy increase in pulp and wax.

With stocks on hand almost nil, most of the cartons go into shipments as fast as they are made.

#### **Labels and Box Wraps**

The year 1947 started out as a year of problems and difficulties for the manufacturers of fine papers, of which label stocks are a part. Shortages of raw materials plague every mill. The demand continues to increase as new problems develop, hampering full operation.

The fine paper mills in the United States have been operating at full production even in the face of a shortage of pulp. However, the demand for all kinds of paper continues to increase. The most serious situation prevailing today is the competition for the paper that the paper mills produce. The magazine and advertising demands on mills have increased tremendously. A number of mills have abandoned the manufacture of label stock because of increased costs and low selling price. They have found the publishing field to be more profitable. Some mills making label and box wraps have curtailed production. In the face of this, label and wrap requirements have shown a constant increase. The importance of packaging appearance, sales appeal, sanitation, etc., combines to make this a fast growing market with highly increased demands.

It is estimated that domestic pulp production in 1947 will be somewhat ahead of 1946. But im-

**Shipping cartons are the limiting factor in many a production schedule and expansion program today.**





ported pulps will be less, which will have its effect on available label stocks of paper.

Prices will continue to remain high because of the overall demand for paper and shortages of pulp. Printing costs of labels will remain high, as in the case of printed cartons, because of increased labor costs and reduced working hours. The scarcity of chemicals and ingredients will keep the costs of printing inks high for some time.

The label and box wrap situation does not appear very bright for the balance of 1947.

#### **Wax Paper**

Even though it is not the largest in volume use, wax paper is one of the most important products in the packaging supply field.

The demand for wax paper has increased in the same proportion as other packaging supplies. Everyone seems to need more than their normal requirements based upon prewar standards. This is because the usage of paper per person has increased considerably in the last five years.

There are three basic products used in the manufacture of wax paper—basic raw stock, paraffin, and printing ink.

**Basic raw stock.** The availability of this paper stock has been reviewed above. Some manufacturers of wax paper state that their mill suppliers have given them as much or more than their records show they normally use, based upon prewar standards. This is not enough by 50% to maintain production capacity and meet demands. There will be a shortage in this basic raw stock until more pulp is available.

**Paraffin.** The demand for paraffin, which is the second largest re-

quirement in the wax paper industry, is greater than any time in its history. During the War years, paraffin was comparatively easy to obtain. However, today, because of heavy exports and new uses, such as paper milk bottles and cans used in the frozen food industry, the supply is short. The production of paraffin in the United States is down. This may be due to poor conditions in refineries which have been operating continuously with no time for maintenance. The supply fields and refineries in the South Pacific are not producing yet and it is estimated that it will be at least a year before a substantial quantity of wax will be imported.

**Ink** is the third largest requirement of this industry. This is a difficult material to obtain, largely because of the chemicals required to manufacture it.

The supply and price structure of wax paper will not change for some time, as long as the shortages and demand remain as they are. The shortages will last through most of 1947.

A very extensive research program is being worked on by this industry and within a very short time, a number of new developments will be available.

#### **Fiber Drums**

The use of fiber drums greatly increased during the War period. The demand has continued to increase because of new developments in many industries, the chemical industry in particular.

As paper is the basis of the manufacture of fiber drums, there is a very serious shortage in this industry. Space will not permit a full analysis of this type of package. However, the Fiber Drum Manu-

facturers Association at Van Wert, Ohio, will furnish full information on uses, standardizations, and trends of fiber drums.

#### **Metal Containers**

On December 27, 1946, the Civilian Production Administration removed the government restrictions set forth in Order M-81 to the extent that commodities formerly not permitted to use containers are now allowed metal containers. Because of the world shortage of tin, restrictions were maintained over the type of plates that could be used for the various listed commodities.

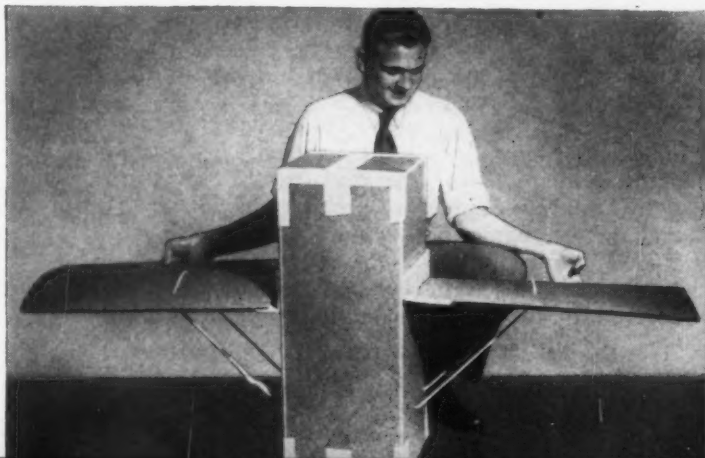
By removing restrictions on items such as pet foods, civilian beer, shortening, and the like, the Government placed in the laps of the various companies making cans the responsibility of distributing such plates as they were able to procure equitably among their various customers. Because of the nature of the Can Industry, most commitments were made on Term Supply Contracts which of course meant that they now had a legal and moral obligation to furnish containers to those customers who in the past had been denied containers by Government Legislation. This made for a difficult and complicated task.

The Civilian Production Administration announced at the beginning of the year the following facts with respect to the production of tin mill products:

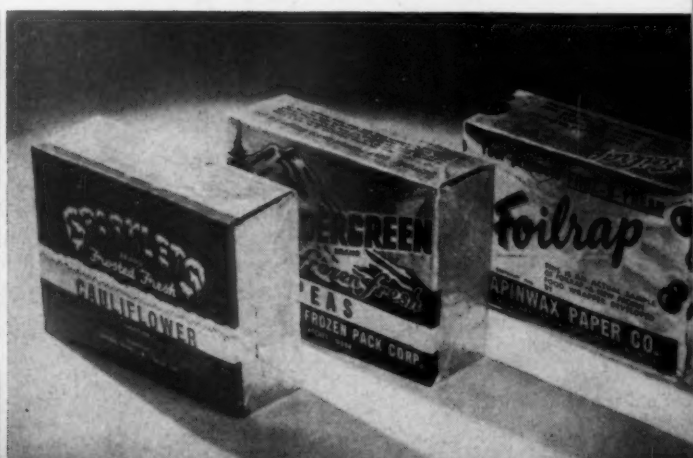
The estimated requirements for can manufacturers amounted to 3,457,000 tons, and the estimated production was 3,807,000 tons. But from this latter figure must be deducted estimated requirements for closures (250,000 tons), Canada

(Please turn to page 306)

New packaging techniques are being made available to marketers and shippers. This container, developed by the Forest Products Laboratory, permits loads up to 75 pounds to be safely dropped from an airplane.



Relatively new industries, like frozen foods, create a large new packaging demand and lead to the development of new packaging materials such as aluminum foil coated with Vinylite resins.





# RESEARCH AND PURCHASING

● **By Donald Frederick**

**I**N a recent survey the National Industrial Conference Board found that practically every business of a manufacturing type is doing research of some kind. Research is being carried on by companies large and small with expenditures ranging from nearly 1% of gross sales to as much as 5%.

The war brought home to American businessmen the importance of continuing research because, in looking back, the winning of the war can now be attributed, in great part, to the highly accelerated pace of engineering and scientific investigation which bore fruit in amazingly short periods—in many instances almost on demand.

Now, in the postwar world, business is setting up research organizations along with government to fully explore all of the possibilities which will result in a better standard of living, more and cheaper products for consumers, better ways of doing things in industry, and new devices which will take the grind out of manufacturing processes. Throughout all industry there is much activity in the field of research, and this means more activity for people in industry who handle purchases.

In practically every research program there are knowns and unknowns; the ultimate aim of research is to discover the truth about some unknown, big or small, that has an answer either in the affirmative or in the negative. There are two general classes of research—fundamental and industrial. Industry is primarily concerned with the latter.

The object of industrial research is to find new ways of doing the same old thing, to apply the results of fundamental research to commercial products, and to explore unknowns to the extent that the correct answers may be obtained. The ultimate object in industrial research is a free enterprise system is to improve conditions which provide a fair return on the invested capital; if this is obtained through the development of better and cheaper products, so much the better for industry.

Wherever there is such a program of research the purchasing department has an important role to play. When all is said and done, the purchasing division or department is chiefly concerned with procurement. All research programs require procurement activities. Since the cost of research must be reckoned with, just as is the case with production, the purchasing department can do much to make research activities profitable. This function is of extreme importance in these days of many activities.

In any research program items of equipment, new materials, new ideas from the outside are important. It is a diversion of talent to let anybody other than the purchasing personnel handle procurement.

When a research project is initiated, one of the first steps is to apprise the purchasing department of the activity and of compounds that are required to get the job under way. Often there is a big gap of time between the initiation of a research project and the actual activity which must get the answer.

A successful approach to the problem of procurement is to place with the purchasing department full responsibility for bringing in new outside ideas, suggestions, equipment, and general information pertaining to the project in question. Engineers concerned with new designs tend to divert themselves of searches for standard items of equipment and other available items which should be handled entirely by the purchasing department.

## **Initial Procedure**

It is obvious that early in any research program engineers must organize the ideas whether they originate with management, sales, or manufacturing. The major outlines of the program (whether it be big or small) should be settled quickly.

Immediately the purchasing department should be brought into the picture. Standard items of equipment, not on hand, will be required at certain times. The basic requirements for such equipment, or materials, should be given to the pur-

chasing department and forgotten about except where deviations must be made for the sake of expediency. Where the basic requirements cannot be quickly established, the purchasing group is the one to obtain information on what may be had.

Where the research project requires special qualities in materials it is not necessary, in many instances, to conduct "sub-research" to establish the right materials; often they are available and the purchasing department can quickly procure them. Again where a component of the new machine or process is a standard piece of equipment with certain specified requirements as to performance, the job will proceed best when this part of the requirement is placed with the purchasing department.

## **Engineering Responsibility**

In the early stages of any research program it is the responsibility of engineering to see that purchasing personnel are fully informed of the program in its entirety. The days of an individual cloistering himself and hacking away at a major problem are gone forever; this is the day of cooperative effort and the specialist. In any enterprise management is anxious to use the talents of its staff for the general good of the business. This is true where research is involved. When the research program is started it is important to see that the purchasing department is represented at conferences where purchased materials and equipment are considered. Too much time and money are wasted on research when responsibilities are not properly delegated.

Engineers concerned with research where purchased items are involved should limit themselves to specifying, approving, and rejecting. When this practice is followed purchasing is done in the proper way. The final decision as to whether an item should be procured or a new design attempted must rest jointly with the purchasing department and engineering, because available talent and plant facilities as well as costs must be considered when such decisions are made.

In any properly organized research program those in charge must draw on all the know-how in the entire organization. In the case of the purchasing department, in addition to the function of procurement, there is the important job of clearing required information and ideas so that time can be saved—and consequently dollars. This may work in several ways but in any case it is a function of purchasing. Purchasing is the main contact with the outside where new products and processes are involved. The job of obtaining literature is one for the purchasing department. This should not be confused with literature research in engineering transactions and other publications. But it does have to do with new and established product literature much of which comes to and reposes in the purchasing department. When a research project is under way, the purchasing department

best prospects for assistance are brought to the attention of the engineering department.

A function of the purchasing department which will greatly facilitate the carrying on of research is that of industry cooperation. Passing through the offices of purchasing departments everywhere, and every day, are representatives of industries seeking new outlets for their products. The greatest opportunities for these representatives often lie in the customers' research projects. Unless the purchasing department is fully informed of work projected and under way it cannot get the valuable assistance that is frequently available from outside sources. This outside assistance runs all the way from furnishing technical advice and equipment to actually making up a new gadget vital to a program.

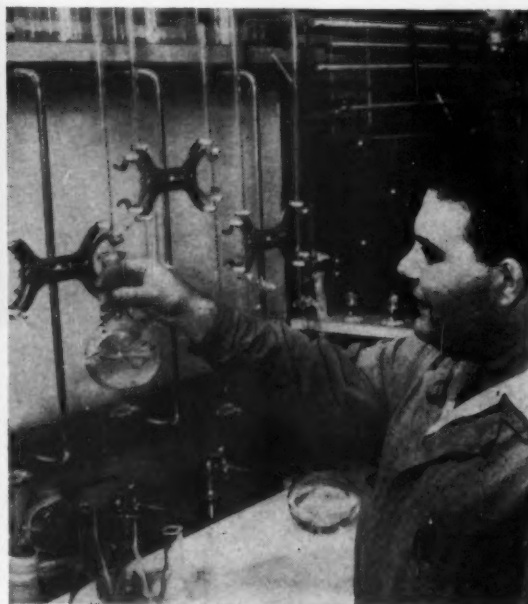
To get such cooperation the purchasing

department is a highly important agency in obtaining it.

It is almost axiomatic that most research projects are debated too long before activity starts; this is due to the fact that wherever a problem is posed there are manifold apparent methods of attack. However, even with research there is timeliness. There is a timeliness that must be determined by availability of funds. There is also a timeliness concerned with costs. The present time is a period when the method of attack on any problem must give full consideration to the costs of material and equipment available. With this particular concern of re-



**When products are in the development stage, many special requirements arise**



**Research is a continuing program in many companies**

ment performs an important duty when it brings into conferences the latest ideas gleaned from the literature of other manufacturers.

The purchasing department also does an important job when it interviews representatives of other manufacturers who have something to do with the project under consideration. Inquiries suggesting such discussions are sent out by the purchasing department. A systematic "weeding" is done by the purchasing department, so that only the

chasing department must be kept fully informed of the progress of all research projects, and this information should be kept up-to-date. No assistance should be expected from outside sources if there is no reciprocation with respect to information being passed on to those who are cooperating and who must take the risk of ultimate failure along with the sponsors. The present success of the present project on development of the revolutionary gas-turbine locomotive to burn coal is

search the purchasing department can be of very great help. The existence of abnormal market conditions in certain industries is ample reason for concentrated study carried out jointly by the engineering and purchasing department.

#### **Purchasing Follow-Up**

When the purchasing department takes its proper part in research programs it has the responsibility of systematic follow-up with respect  
(Please turn to page 316)



**HOW**

**JOHN MORRELL & Co.**

"Since 1827"

**BUYS**



General view of the Purchasing Department at Ottumwa

● **By William Goettler**

Standardization of purchase requirements as an internal policy — cooperation and loyalty in contacts with suppliers — are the cardinal principles in this department

**G**REATER standardization of purchases in order to streamline the purchasing routine, as well as to lower inventories and speed up the inventory turnover, offers opportunities for needed economy and efficiency in the period of stiff competition ahead. The inventory consideration is an important one today. For the past several years, because

of rising prices, no better investment could be made than in operating and maintenance supplies, but now business — at least according to many dependable economists — soon will be faced with falling prices and consequently declining inventory values.

John Morrell & Company of Ottumwa, Iowa, the largest meat pack-

er outside of Chicago and the fifth largest in the country, is one company that has standardized its purchases with advantage.

"Our experience is that standardization of purchases greatly reduces the chance for error and speeds up the filling of orders," says Frank G. Raney, General Manager of Purchases for the Morrell Company



and chairman of the American Meat Institute's purchasing committee. "Speed in filling an order is, of course, particularly important to the meat packer, whose needs shift quickly with markets and the uneven run of livestock," he continued. Furthermore, only through standardized purchasing can a relatively small staff of buyers keep an eye on purchases which range from ten to twelve million dollars a year as is the case of the Morrell Company.

Purchasing for an implement manufacturer, for example, can be done on a predetermined schedule. Buyers know how many units of a particular implement are scheduled for manufacture during a year, and can buy accordingly. Not so with purchasing for a meat packer! (Mr. Raney speaks from experience. An "outsider" in the meat packing business before coming to the Morrell Company, he was for six years with the R. Herschel Manufacturing Company at Peoria, three years with D. M. Sechler Implement Manufacturing Company at Moline, and fifteen years with Dain Manufacturing Company of Ottumwa, in charge of purchasing.)

Storm warnings, crop failures, feeding ratios, and rapidly falling prices may all cause unexpected runs of livestock. Or on the other hand, these circumstances may shut them off quickly.

An unusual run of hogs will bring quick demand for the supplies used

in sausage manufacture. Also, shifting markets often require a different type of carton. The sales department may decide that it is more profitable to sell lard in one-pound cartons for grocery counter distribution, than in 28-pound packages for export. Or a quick shift in prices may make it more profitable to sell bacon in one-pound packages rather than in slabs. Price movements either way, often coming without warning, will cause an unusually heavy demand for a different type of packaging.

Keeping inventories large enough for these special demands would ordinarily require a huge investment. Also, unused packaging might remain in stock for an indefinite period. The Morrell company, for this and other reasons, has standardized its cartons, boxes, cans, casings, glues, pastes, and even the string used for wrapping.

Standardization facilitates filing and handling of requisitions, and results in a few large orders of one item rather than many orders for many items. This makes for better purchasing. And, since vendors receive bigger orders, better relations are maintained with them.

It makes possible, furthermore, the use of code numbers on requisitions. These are a product of standardization, which in turn encourage greater standardization. "Carton No. 430" on a John Morrell requisition, for example, is a familiar item to the sales department, the

operating department, the purchasing department, and to the suppliers. Referring to Carton No. 430 throughout the Morrell plants and branches is practically like referring to a Ford, Plymouth, or Chevrolet.

Copies of the specifications for the carton are in the hands of all the regular suppliers, so orders can be handled quickly by letter or telephone with assurance that the vendor has full knowledge of size, material, style, quality, printing instructions, and product for which it is to be used.

"Since price quotations are all based on identical descriptions, we are free to take the low price without a lot of difficult comparison of price and quality," Mr. Raney explained. Confusion is practically eliminated. Suppliers are not bidding on a similar carton "that's just as good but not quite." Orders are filled with a minimum of time by checkers, and billing and invoices are simplified.

Mr. Raney's experience with code numbers is important because many other purchasing officials have considered their use, but have not been quite convinced of their value.

He also applies the principles of standardization wherever possible to items not bought in quantity lots. For example, his purchasing department, asking for bids on an ice machine, will use standard quotation forms.

"If one wrote letters to four different companies, he would get four different answers," Mr. Raney explained. "Each firm would be bidding on an item varying slightly. Through the standard form, however, we are able to take the low bid on a comparable item from any reputable firm. Standardization, along with the use of code numbers, is the most important move that we have made in order to facilitate efficient and economical purchasing."

During the war and the postwar period, of course, it hasn't always been possible to buy the standardized goods, and substitutions in style and quality had to be accepted in many cases. Also, it has been impossible to follow the regular system of forward buying. Delivery dates for lard cartons, to cite one typical item, are six or eight months in advance. This necessitates the placing of blanket orders for the estimated requirements, and then working closely with the carton manufacturer to be sure that the available board is used in cartons which are most in demand so as to meet requirements as they develop.

**Frank G. Raney, General Manager of Purchases, discusses requirements with General Manager E. F. Paxson of the Savory Foods Division**



Unlike many other firms that shop around for the lowest price obtainable on an item, the Morrell company buys largely from established sources of supply. Calendars, for example, have been bought for over 30 years from one manufacturer, never with any argument about price. Morrell officials feel certain that the supplier, in order to retain an old customer, will quote the lowest price that permits a fair profit for a quality item.

Wire bound boxes for packing meats are an example of purchases from a limited number of suppliers. Although the number of units used annually runs into millions, these are bought from only five different manufacturers. Buying regularly from vendors assures a reliable source of supply, and is another reason why inventories in normal times can be kept small.

"Since the boxes are standardized, we can quickly cross-check prices," Mr. Raney said. "When one supplier gets out of line, we call in the salesman and tell him so without of course, revealing the price of his competitors.

"We tell him also if his price is low," he continued. "This is only fair, and it establishes a sound business relationship. It's been my theory throughout the 38 years I have been in the business, that all deals must be mutually satisfactory.

"Although we like to buy at the lowest price for quality, we want suppliers to make a fair profit just as the Morrell Company itself wants a fair profit. Otherwise a supplier can't stay in business to give us a bid another time."

Here is manifested a determination to stick with old-time business principles. Through its purchasing department, as in its other relationships, the Morrell company strives to retain confidence among persons with whom it does business, an asset especially important to the meat packer—and certainly it takes big business purchasing out of the realm of haggling.

Morrell company buyers operate on the theory that while constant shopping for lower prices will often pay off in apparent saving, these will be counterbalanced by losses taken on inferior items, poor service, and high prices "when caught in a pinch." Too often, also, the purchasing agent who shops for the last nickel of saving, earns the reputation of being a "chiseler." Salesmen overprice an item to him 10%, then make a 5% concession to close a deal.

"That's happened a good many times!" Mr. Raney declared.

The buyer at fair prices, on the other hand, earns the reputation of being a good customer. "And it is he who in the long run buys most economically," Mr. Raney added. "Furthermore, the reputation tends to eliminate wasted time spent on screwballs with bargains."

The plan of buying consistently from one group of suppliers paid big dividends for the Morrell Company during the war and the early postwar period when paper and paper products, which the company needed most, were most difficult to obtain. Suppliers made every effort to fill actual needs of customers whom they knew would remain customers. Many purchasing agents who had been shopping around for bargains and had established no regular source of supply, were caught "without a home" and regretted their practices.

Although orders are big, it is not necessary for suppliers to fill them entirely within a few days. Shipments are scheduled and expected only to keep ahead of plant requirements.

In many industries where centralized purchasing is not firmly established, it is the custom for various department heads to handle the many functions of buying. The purchasing department, as a result, be-

comes merely a "rubber stamp" agency. To a certain extent this was the status of the purchasing department at the Morrell company 10 years ago. However, buying there has since been strongly centralized with many economies resulting.

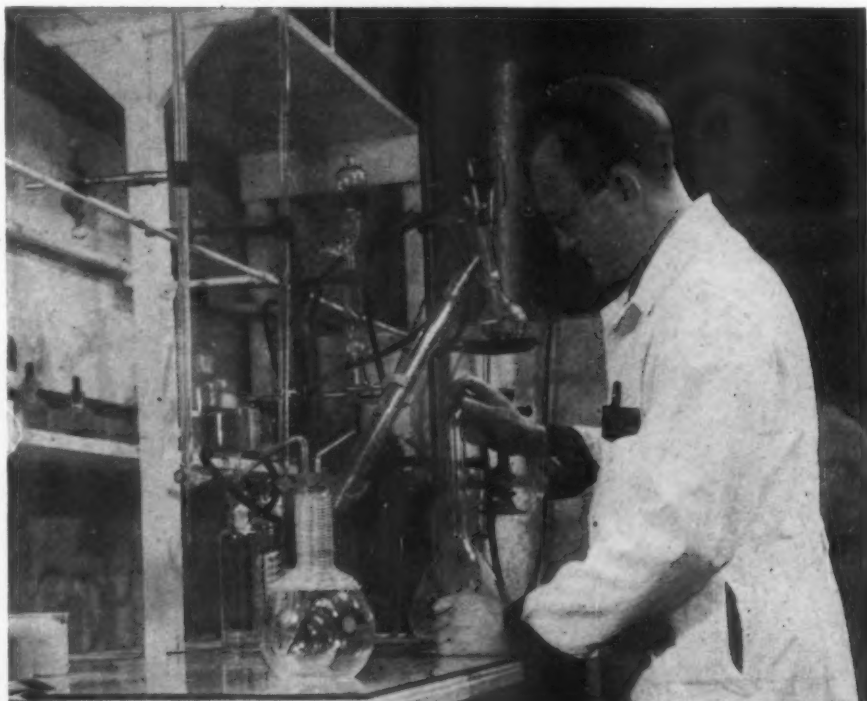
There are three assistants to Mr. Raney in the main office at Ottumwa. Division of duties has been made largely in accordance to the individual buyer's experience.

H. R. McCaughey, the first assistant, purchases mechanical equipment for the operational departments which include conveyor lines, boilers, refrigerator cars, ice manufacturing machines, and similar equipment. He also buys raw materials among which are wheat flour, soybean meal, and cereal products used in the manufacture of Red Heart dog food, one of the widely selling John Morrell & Company products.

A. E. Minor, the second assistant, handles packaging supplies, the largest single classification of items bought by any meat packer. These include metal cans and containers, corrugated boxes, solid fiber boxes, wirebound boxes, cellulose casings, stockinettes (knit gauze meat coverings), wrapping papers, glass jars, labels, chipboard boxes, solid wood boxes, cotton and burlap bags, twine, barrels and staves.

The third assistant, H. J. Farns-

Laboratory controls help to maintain quality standards; Dr. C. E. Cross is Chief Chemist for the Morrell Company



[illegible]

worth, is responsible for buying trucks and salesmen's cars, along with corn, hay, and wheat needed for feeding livestock. (The purchase of livestock does not come within the responsibility of the purchasing department.)

After placing an order, office assistants follow up file copies to see whether shipments are made in accordance with instructions and the supplier's promise. If there is delay, a regular follow-up form is used to expedite shipment. In an emergency the department wires or telephones a supplier.

All orders that involve printing for the Morrell Company are cleared through the advertising department. It keeps posted on the many changes in government regulations regarding food products. While other Morrell plants make routine purchases from firms with which the company has quantity contracts, all orders for printing

must go through the office at the main plant for checking.

"I for one am thoroughly sold on centralized purchasing even for a big company," Mr. Raney said. "The central purchasing department must lay down policy for the whole organization, and must control purchases even though actual transactions are made by buyers at branch plants. The object is not to destroy autonomy of a unit, but to obtain the advantages of quantity purchases. Also, because of laboratory facilities at a central point, it is easier to control quality."

John Morrell & Company has laboratories at its plants in Sioux Falls, South Dakota, and Topeka, Kansas, but testing of materials is largely the responsibility of the main laboratory at Ottumwa.

Mr. Raney makes regular visits to branch plant offices in order to remain well acquainted with personnel, and to see that purchasing

routine and practice is kept in accord with policy. He also visits suppliers. Acquaintanceships made in this way have often helped in obtaining raw materials in an emergency.

The purchasing department buys roughly 15 million cartons and boxes a year. One million of these are of solid wood, three million wire-bound, three and one-half million solid fibre, and seven and one-half million corrugated.

These purchases, along with two and one-half million pounds of grease-proof parchment for wrapping, indicate why the company was fortunate in having maintained good supplier relations in paper.

Other mass purchases include two and one-half million glass jars of various sizes, \$2,500,000 worth of tin cans, and 1,000 carloads of salt.

"Paper remains one of the most difficult items to obtain," Mr. Raney said. "All types of paper and







# The XYZ OF Purchasing

There are a lot of obsolete and misleading ideas about purchasing being taught in the college courses on marketing and management

Our own educational program loses much of its effectiveness by failing to take note of this situation and trying to correct it

**By Stuart F. Heinritz**

**E**XACTLY one year ago, in the issue of August 1946, we published an article entitled "The ABC of Purchasing". It was an article about education. Specifically, it analyzed the type of information—or rather, misinformation—concerning industrial purchasing, that is being offered to thousands of earnest students of business administration in some of our most highly regarded colleges and universities. For while it is true that through the efforts of the Educational Committee of the N.A.P.A., many excellent courses in purchasing have been established and a wealth of authoritative teaching material has been provided, an insidious condition exists that tends to nullify this constructive program. We believed then, and we believe now, that purchasing men who have the interests of their profession at heart ought to be aware of this condition, and that they ought to do something about it. We believe,

too, that it would be a service to the whole cause of business education and to the schools concerned, if this situation were corrected.

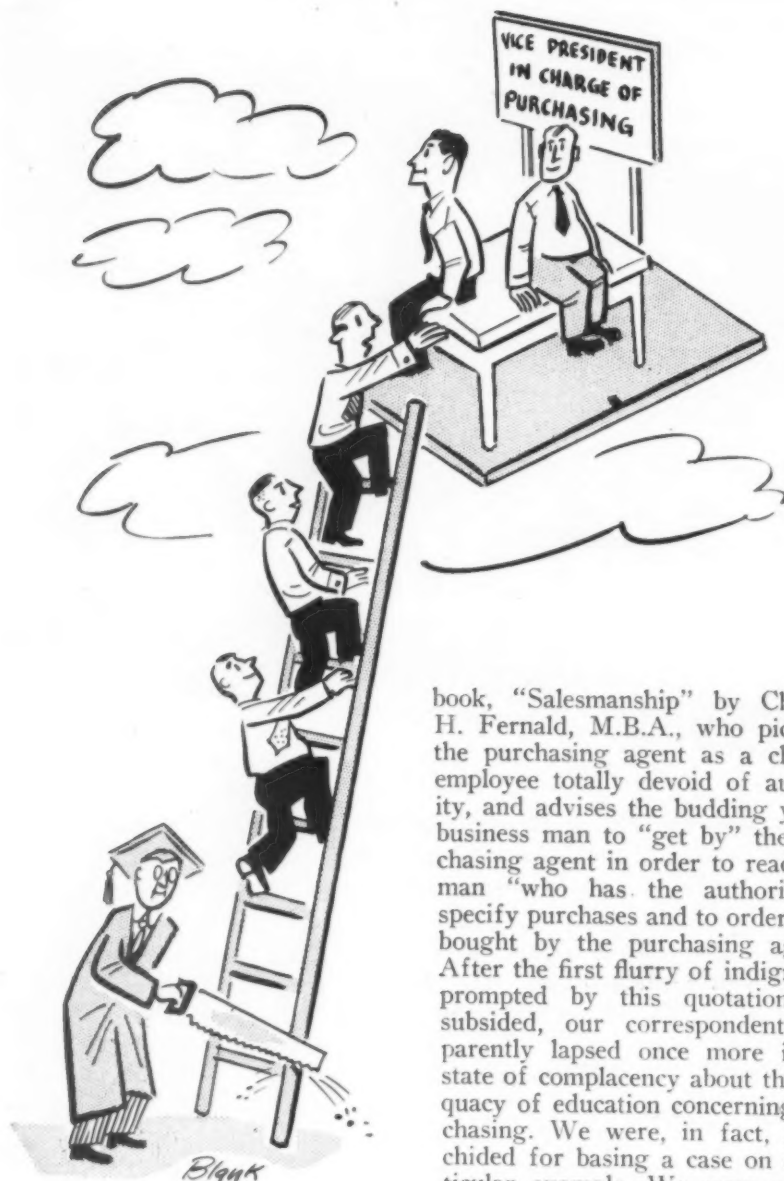
By way of review, let us first recognize the tremendous advance that has been made in education for purchasing. Most purchasing men have gained their familiarity with this program through the courses sponsored by the several Associations and attended largely by junior members of purchasing staffs. The enthusiastic response to these projects in all parts of the country, and the excellent results attained, give us confidence that we are on the right track.

But up to this point, we have been dealing with a partisan student body that approaches the subject with full acceptance of the significance of the purchasing function and an appreciation of its place in the general scheme of management. In a sense, we have been talking to ourselves. That is only

half the job. The broad program has always recognized a second objective—to cultivate an understanding and appreciation of purchasing among the general body of students of business administration, the men who may not necessarily follow purchasing as a career, but who will in all probability become the general management executives of tomorrow. It is highly important to the status and opportunity and personal fortune of every man in purchasing that this group be properly informed, and it is important to the well-being of industry as well.

We are gratified to know, then, that comparable courses in purchasing are now offered in more than a hundred colleges and universities, as a part of the management curriculum. Surely this should provide the means for attaining our second objective. Unfortunately, it cannot be done quite so simply.

Consider the case of the student



attending one of these courses. At the conclusion of the class hour, he picks up his books and goes across the hall to a class in marketing, where, in terms just as positive and convincing, he is taught a diametrically opposite thesis, based on the complete negation of purchasing science and authority. What is he to believe? Will he accept the purchasing course as one prepared by qualified specialists who know whereof they speak, and who deal in facts? Or will he proceed to discount the purchasing text as representing a narrow and biased viewpoint? Or will he merely become hopelessly confused about the whole issue that we in purchasing have attempted to clarify?

Just such a case was presented in the previous article, citing the teachings of a widely accepted text-

book, "Salesmanship" by Charles H. Fernald, M.B.A., who pictures the purchasing agent as a clerical employee totally devoid of authority, and advises the budding young business man to "get by" the purchasing agent in order to reach the man "who has the authority to specify purchases and to order them bought by the purchasing agent." After the first flurry of indignation prompted by this quotation had subsided, our correspondents apparently lapsed once more into a state of complacency about the adequacy of education concerning purchasing. We were, in fact, gently chided for basing a case on a particular example. We were assured that Professor Fernald's text is certainly not typical of what is being taught in the accredited schools of business. Would that this were so! But the evidence is all in the other direction.

Within the next few weeks, another academic year will be getting under way, and a few thousand more future business executives will receive their introduction to the principles of business administration. We ought to be very much interested in what they are going to be taught about purchasing and purchasing agents. We need not worry very much about the actual course in purchasing, which he may or may not elect; we know these courses and have confidence in the soundness of their teaching. It is quite likely that he will take a course in marketing; certainly he should. In that case, it is quite probable that his textbook will be "Principles of Marketing" by Maynard

and Beckman, published by The Ronald Press Company, and now in its fourth edition, 1946.

#### A Statement on Purchasing

Our student has every right to be impressed by the credentials of these distinguished authors. Harold H. Maynard, Ph. D., is listed as Professor and Chairman of the Department of Business Organization, Ohio State University. His colleague, Theodore N. Beckman, Ph. D., is listed as Professor of Business Organization at Ohio State University and formerly Consulting Expert in Charge of Wholesale Distribution, Bureau of the Census, United States Department of Commerce.

Along in Chapter XIX, Messrs. Maynard and Beckman get around to discussing "The Marketing Structure for Industrial Goods". Here of course they run smack into the unique and curious phenomenon of the industrial purchasing agent, who "has no counterpart in consumer goods" marketing. It would seem that the very uniqueness of this position should have prompted some inquiry as to why Business Organization (which is the special field of both authors) sees fit to establish and maintain such a post. This is exactly the time and the opportunity to set forth the facts about industrial purchasing—how it operates and what it accomplishes for the organization as a whole. Instead, in the same sentence which announces the discovery, the authors cavalierly dispose of the whole matter by continuing: "but salesmen of industrial lines have long since learned that in thousands of companies he (the purchasing agent) has little influence in determining what brands or quantities shall be purchased other than for routine supplies."

The remainder of this brief paragraph cites the personnel that is purported to make the buying decisions—plant engineer, superintendent, foremen, president, board of directors, consulting engineers, and architects. On equipment, personal wishes of a foreman or superintendent are cited as the decisive factor. The tool room foreman (again!) is credited with "decided influence". The parting shot pays tribute to the force of reciprocity and observes that personal acquaintances of company officials are to be favored against the best judgment of the purchasing agent.

That, Mr. Purchasing Agent, is the sum and the end—the XYZ of



purchasing, as expounded jointly by a department chairman in one of our leading universities and by his associate, an accredited expert in distribution. Their dictum is committed to type in a widely used textbook, from which some hundreds or thousands of young men and women will acquire their ideas and convictions about business organization and procedure. We cannot avoid the issue: this concept of the purchasing agent's job and status is thoroughly representative of the type of education about industrial purchasing that is being offered in schools and colleges today, without benefit or blessing—and unfortunately without the concern—of our "official" educational program.

### Questions of Fact

This discussion is not primarily a criticism of the authors cited. There is no reason in the world to question their integrity or to attribute any sinister motive to their statements on purchasing. Every author strives for accuracy in his work, and the high standing of Messrs. Maynard and Beckman in the teaching field is ample assurance that this is the case in their book. It simply happens that on one point—which, from the casual mention and small amount of space allotted, quite evidently seemed a minor point to them, though we recognize it as a factor of major importance—they were inadequately informed. This is particularly unfortunate in view of the fact that so much fresh, conclusive, and authoritative information is now available on the subject of purchasing to controvert such careless and outmoded comment.

Since we are dealing with a question of fact, not theory or opinion, it would be easy to marshal the evidence to contradict such an underrating of the purchasing function. The specific, factual information has been compiled with regard to the procurement of all sorts of industrial items, from paint brushes to machine tools, and no month passes without the accumulation of additional studies of this nature, all pointing to the key position of the purchasing officer in matters of industrial procurement and the growing importance of his position in the organization.

We need not rely on our own research to develop such information, and we prefer not to do so since that might be discounted on

the grounds of our special interest and would tend to make the whole subject a matter of controversy rather than of fact and reason. But we might cite, for example, an objective study such as that made by the Market Research Division of *The Iron Age* within recent months on the procurement (and therefore on the marketing) of steel pipe in the metalworking industry. That study was addressed to 3,200 plants covering a broad segment of the metalworking field. It concerned an item and a market that represented the very substantial figure of 724,982 tons of steel in 1946. The returns upon which the conclusions are based came from plants which embrace approximately 10% of the total employment in the entire metalworking industry.

The study disclosed that the specification of steel pipe for purchase, in actual industrial practice, is done as follows: In 38% of the companies, by the purchasing department; in 29% by engineering personnel; in 20% by maintenance men; in 7% by production men; and in 6% by administrative officers—a classification that Maynard and Beckman report as "almost always by the president and board of directors." Thus purchasing, dismissed by the textbook as a factor of "little influence", is actually the most influential factor by rather a wide margin.

The marketing textbook stresses the importance of "brands". The study of actual procedure proves that specification by brand occurs in only 2% of the cases making up this important market, the almost universal method (96%) being specification of type, without mention of brand. And now comes the significant query: "If the brand is not specified, who decides where to place the order?" Remember that this refers to 96% of all the steel pipe sold. Marketers of pipe are keenly interested in this answer, and the textbook ought to give it to them, for the success of their whole marketing policy depends upon this fact. And the fact of the matter is this:

Purchasing	.....95%
Administrative	..... 4%
Engineering	..4/10 of 1%
Production	..4/10 of 1%
Maintenance	..2/10 of 1%

How different a picture of purchasing practice and purchasing influence these facts present, than the casual and completely misleading comment of the "authorities" on business organization and market-

ing! For the benefit of all industry in its marketing processes for industrial goods, as well as to set the record straight in respect to the purchasing function, the published information ought to be corrected.

### Whose Responsibility?

That responsibility comes right back to purchasing men—not that they should arrogate to themselves a right of censorship, and not in any sense of controversy, but because this is the group that has the information. That responsibility is implicit in the broad Association program of constructive activities and advancement of the field, and in the committee structure set up to implement that program.

The responsibility actually fits into the program at two points. One of the standing committees of the Association deals with "Public Relations". For those who insist that purchasing has no problem of public relations, and for those equally short-sighted who regard public relations as synonymous with publicity, here is a clear example of a case involving public opinion regarding purchasing, a proper instance and an excellent opportunity for molding that opinion to the end of a better understanding and a more accurate comprehension of the purchasing function in industry.

Another of the standing committees—and one which has an outstanding record of accomplishment over many years—is the Committee on Education. One of the objectives of that Committee is to reach the advanced students of business administration and to inculcate in these executives of tomorrow an appreciation of purchasing, regardless of what their particular niche in the executive organization may eventually be. It is basic, of course, that the first step in education for purchasing is to equip purchasing personnel to do a Grade A purchasing job. But to afford purchasing personnel an opportunity to put those teachings into practice and to be of maximum value to their several organizations, it is equally important that sales and production and engineering executives, and those in top management positions, understand the accomplishments and potentialities of a strong and competent purchasing department. If this could be done solely through good courses in purchasing, the responsibility would be a relatively simple one. But purchasing is also taught, indirectly, in courses on

marketing and production management—and it is proper that this should be the case, provided that this teaching is sound. We are forced to the conclusion that in many such courses, the teachings regarding purchasing are not sound. And we cannot afford to overlook this situation in considering the broad educational program.

#### **Reaching the Wrong Man**

Why has the information on purchasing—the specific, factual data on how industry buys and what good purchasing means to the business fortune of any given enterprise—failed to reach the authors and teachers of marketing practice? Partly, because it seems rather evident that as “salesmen” for the cause of purchasing we have fallen into the very error we condemn so strongly in some salesmen of industrial products—we haven’t directed our efforts to the “right man” in the teaching organization, or we have gone “over the head” of the fellow whose function it is to teach (just as our function is to buy) and have concentrated on persuading the dean to put a purchasing course into the curriculum without getting the support of those other courses which can aid mightily in establishing purchasing as a vital and significant part of industrial management or can negate our contention in the student’s mind. Like the salesman who wins the requisition and loses the order, often without ever knowing why, we win the course in purchasing but lose the larger opportunity if the professor of marketing or organization says “So what?” or insists that the foreman is the key man in procurement.

#### **Two Remedies**

There are two ways in which we must support our educational program if we want to make it truly effective. One of these is at the “local level”. It has been applied with good results in a number of instances where the teacher of purchasing—usually a practical purchasing man himself—sits down with the teachers of organization and marketing and accounting at the beginning of the school year to coordinate the information that is to be given to the students in their various courses, that the teaching may be consistent rather than contradictory or confusing, and putting his special knowledge and experience in this particular field at the service of those who approach the subject from another

angle. Such a practice is highly commendable, and up to a certain point it is highly effective; i. e., it permits the presentation of the factual information at the point of teaching responsibility. Across the conference table, moot questions and differences of opinion can be ironed out, arriving at a working basis of mutual understanding just as the purchasing department must arrive at a working basis with other departments in actual business practice. In such a procedure the facts will prevail, to the extent that the facts themselves justify the decision, and more than this we can not ask. This idea is so sound from the educational viewpoint that one would expect every dean or department head to insist on such correlation. If he doesn’t, the teacher of purchasing can well initiate the practice, as has been done in Cleveland and Chicago and in other cities.

The second point, dealing with the printed textbook, is more basic, more difficult, more delicate. It cannot be undertaken, much less achieved by the individual at the local level. It requires the organized direction and the prestige of the Educational Committee for its justification and the authority of its recommendations. But when approached from this angle, it is not only a proper Committee project; it is a definite responsibility of the educational program.

From time to time we have called attention to specific, isolated examples of what might be termed “subversive teachings” in regard to purchasing, and have attempted to present the facts applicable to these cases. We shall continue to challenge, to reason, and to develop pertinent facts whenever such an occasion arises. This we consider to be a part of our editorial function. There is a strong temptation to become argumentative in such cases, but as we encounter more and more of these printed fallacies that have crept into the business curriculum we become more inclined to view the situation with sorrow rather than indignation, for in nine cases out of ten we are convinced that it arises chiefly from the failure to get current information on purchasing to the persons concerned, and not from any deliberate intent or even from any deep conviction.

#### **Educate the Educators**

This is not a subject for a crusade; basically it is a definite part of the national educational pro-

gram. It can be handled effectively only when the Educational Committee adds to its objectives of educating purchasing men, educating students of business, and educating top management, the further objective of educating the educators.

It is legitimately and fundamentally a part of the educational program to know what is being taught about purchasing. It should be a responsibility of the Educational Committee to examine critically *all* of the textbooks on marketing and management that “teach” purchasing indirectly or by inference, as in the passage cited earlier in this article. This should be done not on the plane of censorship or controversy, but on the high plane of objective truth in education, and with the idea of making the latest and best information on the subject of purchasing available to those who know it chiefly, or only, from tradition or from the non-objective viewpoint of some other specialized function. In a substantial majority of cases, such cooperation will be welcomed by teacher-authors who are eager for fresh and authoritative teaching material and are sincerely desirous of keeping their works up to date.

#### **New Facts**

The whole science of purchasing has been rewritten since 1927. Most of the worth-while research on the subject has been done since 1937. Any data that fails to take into consideration the developments of the war and current postwar period is of dubious value. The first edition of the Maynard and Beckman text on marketing was published in 1927, when their commentary on the industrial purchasing agent was certainly far more true than it is today. We may question the vague authority attributed to what “salesmen of industrial lines have long since learned” about the influence of purchasing agents. That in itself pushes the basis of their statement still farther back into the dark ages of purchasing, but in all likelihood that was the only source of information available at the time, with no body of research to back up the opinion. It is not altogether strange that this generalization, which has “long since” ceased to have any foundation in fact, has persisted through the succeeding editions of 1932, 1939, and up to the date line of 1946, unless some one should take the trouble of bringing the information up to date. In all like-

(Please turn to page 320)



# PURCHASING DEPARTMENT REGULATIONS

East end of the Quadrangle, showing the Chemistry and Physics Buildings and the Asa G. Candler Library



**N**O MATTER how well organized a purchasing department may be, or how carefully its systems and internal procedures are planned, efficient and effective procurement can be accomplished only to the extent that those who use the purchasing department — the divisions where needs arise and requisitions originate — coordinate their own procedures regarding materials to conform with the buying procedures an dhelp to make them workable.

Standard practice instructions for purchasing should therefore include these preliminary stages, explaining to those outside the purchasing department the reasons why a centralized purchasing policy has been adopted, how the function operates, and advising them on the proper procedures and use of purchasing

**An important phase of standard practice instructions for purchasing concerns the regulations for departments where needs and requisitions arise, that they may conform to established buying procedures**

forms so as to make possible the smooth conduct of the purchasing office and to obtain maximum service and value—for their own departments and for the organization as a whole—in procurement of their requirements.

The following text is that of a comprehensive memorandum issued by the Business Manager of Emory University, Georgia, describing the purchasing department which is under his supervision. The memo is in mimeographed form. Stapled to it

are sample copies of the three key forms mentioned in the text, and around which the purchasing system is organized. This manner of presentation has been effective and useful. It is readily adaptable to serve the same purpose in many other types of business and industrial organizations where no formal manual of procedure has been compiled, and where the specific topic has not been otherwise covered in the form of standard practice instruction sheets.

**I**T is a recognized fact that procurement of materials, supplies, and equipment in large organizations has for a long time been a highly specialized science of its own. Educational procurement covers a broad and important area in the total field of industrial purchasing. In the interest of further efficiency and economy of operations, a Purchasing Department has been set up in the Office of the Treasurer and Business Manager at Emory University.

## PURCHASE OF SUPPLIES AND EQUIPMENT

The several reasons which led the Executive Committee to take such action may be briefly summarized as follows:

1. Emory University with its hospitals, its many instructional, research, and service divisions, spends

annually almost \$5,000,000.00 for personal services, operating supplies, and equipment.

2. Many commodities purchased are in common use among several departments. For example, the following classes of commodities may



be mentioned: (a) office furniture and fixtures, (b) laboratory and classroom furniture, fixtures, and equipment, (c) laboratory chemicals and supplies, (d) printing, (e) printing, (f) food supplies and kitchen equipment, (g) books and instructional materials, (h) operating supplies, repair parts and equipment for maintenance of the physical plant.

3. The purchasing procedure provides for the consolidation of purchases wherever possible and thus obtains quantity discounts for volume purchases, the use of favorable contracts entered into by the National Educational Buyers Assn., and for entering into other contractual arrangements with vendors where correspondingly favorable prices may be obtained.

4. The market for commonly used commodities varies according to general economic conditions, demands of the armed services and other governmental requirements, and the supply of the individual vendor as determined by labor, unfilled orders, and raw materials. We shall attempt to keep abreast of these developments to the advantage of the using departments of the University.

5. As new and better sources are developed, they will be brought to the attention of using departments.

6. The University is issuing annually approximately 10,000 purchase orders for its various divisions. This volume of orders

involves the handling of approximately 25,000 invoices and approximately 10,000 letters each year. Such a volume of work can be handled effectively only by a group of people who are specifically trained for this work.

7. Information received from vendors, through the mails and from their sales representatives, from the Educational Buyers Assn., from the National Assn. of Purchasing Agents, and other sources, will be studied, tabulated and distributed to the various divisions of the University, as it comes to the attention of Business Office.

8. Experience in other institutions of higher education and in industry generally has clearly demonstrated the advisability of standardization in many lines, not only for the sake of economy in the original purchase, but also because of the advantages in making quick repairs, shifting and borrowing among departments, and because of smaller inventory requirements.

9. Vendors generally are eager to provide the best possible service on large orders or in cases where the potential demands for their products are great. Small and isolated orders often fail to receive their best attention.

10. A routine system of collecting information, receiving quotations, placing orders, expediting and following up on deliveries, and clearing orders and invoices for payment, eliminates confusion and pro-

motes efficiency in the Business Office of the University and creates good will with vendors. Quicker and more satisfactory service to using departments is assured by having this work done by one group of people, trained in the techniques demanded and familiar with the general requirements in the University and with the markets.

11. Cash savings achieved are made available to the budget unit for which materials are purchased. If an item commonly costing \$100.00 can be procured for \$75.00, there is available \$25.00 to the using department for meeting additional needs of supplies and equipment. This is one of the many examples by which the Purchasing Department can stretch departmental budgets.

12. The Purchasing Department will aid using departments by keeping them posted as to market conditions, searching for scarce commodities, watching surplus property disposed of by the government, advising with department heads as to possible substitutions or improved materials and by attempting to secure for them additional information in which they may be interested.

The above listed advantages of centralized purchasing will inevitably result from having all procurement functions of the University more centrally supervised than they have been in the past. Such results cannot be achieved without the complete cooperation of each budget unit. It is the feeling of the Executive Committee of the Board of Trustees that the University owes a definite responsibility not only to each of its operating units, but also to its constituency "that the maximum ultimate value for each dollar of expenditure be received." To this end, the policies and procedures as outlined in this bulletin have been established.

The Office of the Treasurer and Business manager is in position to render prompt service and to give immediate attention to all purchase requests. It, therefore, follows that all negotiations with vendors of materials, supplies, equipment, and services should be cleared through the Business Office.

The Supervisor of Purchases will be available during regular office hours for consultation with faculty members regarding their needs. He will cooperate with the faculty in writing specifications and ordering special equipment. When the requisition involves items in general use throughout the Univer-

**Charles W. Hayes, supervisor of Purchases, discusses the purchasing program with George H. Mew, Treasurer and Business Manager of Emory University**





responsibility for requisitions signed by such an authorized individual.

D. Wherever possible, group like items on requisitions or group by suggested source of supply. *Do not combine on one requisition supplies or equipment to be paid for out of more than one fund.*

E. As full and complete specifications as possible should be furnished to insure that all merchandise meets departmental requirements. Ordinarily, materials and supplies should not be requested by brand name unless there is no other choice.

F. Specify a required delivery date. Allow as much time as possible in order that quotations may be secured and compared so that the best possible prices may be obtained. With the present difficult situation as regards labor, supplies, and raw materials, delivery is often delayed for weeks or until the vendor can secure or manufacture the merchandise ordered. Vendors tend to increase their profit margin for rush purchases.

G. If possible, in cases of unusual items suggest one or more vendors. Additional suggested vendors may be listed in the body of the requisition or on a memorandum attached thereto.

H. Additional specifications or lists of materials may be attached securely to the requisition form in cases where there is not sufficient room to include all pertinent information on the form.

I. When the purchase order has been issued, a copy of it will be sent to the using department.

J. When making inquiry to the Purchasing Department about an

order, please give order number and name of vendor.

K. If merchandise from out of the city is received before the invoice reaches the department, please notify the Supervisor of Purchases.

L. Problems regarding breakage in transit, short shipments, unauthorized substitutions, etc., should be brought to the attention of the Purchasing Department immediately, in order that satisfactory adjustments with the vendor or transportation company may be made without delay.

M. If any material is delivered to your department which you cannot identify, call the Purchasing Department immediately since occasionally shipments are misdirected by the vendor.

#### Purchasing

After the Supervisor of Purchases receives the requisition from the using department, he will check the departmental budget for availability of funds. If no funds are available, the department head will be notified and the requisition will be held in abeyance until funds are provided. The Supervisor of Purchases will then take the proper steps to investigate the market, place the order, and secure delivery of materials for the department. In many cases the negotiations for purchase may be made by telephone and purchase orders immediately issued. In other cases, particularly those involving appreciable expenditures, sufficient time will be required to secure quotations by mail, to tabulate them, and to allow the Supervisor of Purchases adequate time to

assure himself that the most favorable possible purchase is being made. Such a procedure will require considerable time. Additional time will be required by the vendor in assembling sizable orders, packing them for shipment and delivering from distant points.

It is advisable also, that when purchases of equipment items are contemplated, even though the exact specifications have not been worked out, the Supervisor of Purchases should be advised in advance of the contemplated purchase so that he may be on the alert for any information that may come his way through advertisements, catalogs, or salesmen. He will then be in a better position to advise and to work cooperatively with the department head in drawing specifications, writing requisitions, etc.

As a general practice, salesmen should not be encouraged to visit using departments without first seeing the Supervisor of Purchases. This division will gather and make available information of interest to using departments as it is collected and thus save much valuable time of faculty members and administrative heads that may be lost by interviewing the many salesmen, agents, and solicitors who may find their way to the campus, laboratories, and class rooms.

In many cases, particularly in these times of continuing acute shortage, materials ordinarily used are difficult to find and sometimes cannot be procured. In such cases where substitutions are necessary, the Supervisor of Purchases will consult with the requisitioning de-

Emory University Campus



The Emory University Hospital storeroom comes under the supervision of the purchasing department





Much money is saved and can be saved by following the general principle that the purchase should be made of a commodity which will adequately perform the function for which it is required regardless of brands or advertising; e.g., C. P. chemicals should not be purchased if technical or commercial grades will suffice. The department ordering should advise the Supervisor of Purchases whether C.P. or technical grades are required.

### Emergency Purchases

Emergency and rush purchases are of necessity costly and should, therefore, be discouraged.

Using departments are urged to anticipate their requirements for supplies and equipment a sufficient length of time in advance of the need for them to allow for the routine handling of requisitions, the securing of bids, the issuance of purchase orders, and time for the delivery to the University of merchandise before the need becomes acute. There will arise, nevertheless, emergency situations that cannot be anticipated by some departments or that must be met regardless of whether the department should have anticipated its needs and ordered the supplies in advance. In cases of this nature, the Business Office must act quickly to secure such needed materials and supplies in order to keep the using department functioning smoothly and efficiently.

<b>EMORY UNIVERSITY</b> <b>Form No. 2</b>		<h2 style="margin: 0;">REQUISITION TO BUSINESS OFFICE</h2>			
<b>Department Requisitioning</b> _____		<b>Date</b> _____			
<b>To Business Manager—</b> <b>Please Supply at</b> _____		<b>Appropriation</b> _____			
<b>Not Later Than</b> _____		<b>Order No.</b> _____			
<b>Vendor Suggested</b> _____		<b>GIVE DEFINITE DATE</b> _____			
<b>BUILDING AND ROOM NUMBER</b> _____		<b>LEAVE BLANK</b> _____			

QUANTITY	CATALOG NUMBER	ITEM (GIVE COMPLETE SPECIFICATIONS)	EST. UNIT PRICE	ESTIMATED COST	LEAVE BLANK

REQUESTED BY _____  APPROVED—DEAN OR ADM. OFFICER _____	TREASURER AND BUSINESS MANAGER _____  SUPERVISOR OF PURCHASES _____
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chases will then take immediate and proper steps to purchase such emergency supplies by telephone or by telegraph and have them delivered or picked up as quickly as necessity dictates.

The Supervisor of Purchases usually will not be able to shop the market as thoroughly for emergency needs as he would if adequate time were allowed. Many items will, of necessity, be expensive under such circumstances. When, moreover, such items or supplies are ordered in advance and delivered as a part of a larger order, they could be secured at a lower price than when emergency purchases are made. For these reasons, the Business Office discourages, insofar as possible, such emergency requisitions. The Supervisor of Purchases will advise with departments as to the necessity of anticipating their needs and for buying in quantities.

marked "Confirmation" will be sent to the department concerned.

### Unauthorized Purchases

No individual has the authority to enter into purchase contracts or in any way obligate the University for and indebtedness unless specifically authorized to do so by the Board of Trustees, the President, or the Treasurer and Business Manager. Even if a particular problem is discussed by the department head with the President or the Treasurer and Business Manager and approval is secured, the Supervisor of Purchases must be informed so that a purchase order may be issued and all documents handled in the routine fashion.

Firms ordinarily doing business with the University are aware of this policy and are advised that all purchases chargeable to Emory University must be authorized by an Emory University Purchase Order signed by an authorized individual. The University will not undertake to reimburse officers or employees for the cost of any purchases on behalf of the University, unless previous arrangements to that end have been made.

### Correspondence with Suppliers

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**Emory University Hospital**

The only exceptions involve those special cases where the technical details concerning the merchandise make it advisable to delegate authority to others. In such cases, the Purchasing Department should receive from department heads copies of all correspondence regarding an order. It is rather essential that this procedure be closely followed, because it has been the experience of many purchasing agents that departments in writing suppliers about orders have unintentionally left out certain very essential and valuable reference information regarding the order — information available only in the Business Office. The using department should understand that the Supervisor of Purchases will promptly handle any special matters or requests that may be referred to him.

In order to expedite the delivery of supplies after purchase orders have been issued, the Business Office will follow up, as a routine measure, all orders where it appears that a delay in shipment has occurred. In cases of special need, or where immediate information is desired about an order, a special letter will be written or a telegram sent.

Invoices, statements, and correspondence concerning outstanding orders will occasionally be mailed by the vendor to the using department. Upon receipt of such mail, the using department is requested to forward it to the Supervisor of Purchases. The Supervisor of Purchases will be available during regular office hours for consultation with department personnel concerning ques-

tions of shortages, substitutions, breakage, delayed deliveries, or other such matters which may be of interest to the using departments.

In those instances where it may be necessary for the Supervisor of Purchases to correspond with suppliers about a particular order, the department concerned will be furnished with a copy of such correspondence for its information and for its files.

#### **Freight and Express**

All shipments delivered to a department by motor freight lines or by the University truck should be accepted and signed for by a representative of the department. When receipting delivery tickets, way bills, bills of lading, or invoices, the department name should also be shown on the document. Materials received should be opened and inspected immediately. Occasionally through a vendor's error a shipment will be sent to the wrong department. In such cases, call the Supervisor of Purchases *immediately*. He will arrange for transfer to the proper department.

#### **Payment for Goods Received**

In order to take advantage of cash discounts the Business Office must pay all invoices promptly. As soon as invoices are received in the Business Office, they will be sent to using departments for approval. When received, such invoices should be checked against the merchandise and if found to be correct, approved by the department head or his authorized representative,

and returned immediately to the Business Office for payment. *Remember that all cash discounts, if invoices are paid on time, are savings to the budget of the using department.*

Any discrepancies between the invoice and materials received should be noted on the invoice or on an attached sheet. In some cases, a Purchase Order will be issued for several items. The vendor will render invoices for small groups of these items as they are delivered. It will be our policy to pay for these items as invoices are received. The departments will be notified if it is necessary to cancel any undelivered portion of the order.

#### **Surplus Property from the Government**

In the past two years approximately \$500,000 has been saved through purchases made from the government and by securing material which has been donated to the University. Often this equipment is exactly what is needed by a department; usually it is a highly desirable substitute, at least, considering the savings that have been made.

The Supervisor of Purchases will notify the department head of any items available which are suitable for his use. If departments have items in which they are interested but which their budget can afford only if bought from the government, they should write a memorandum to the Supervisor of Purchases detailing their needs so that he can be alert for these items.

All negotiations with governmental disposal agencies *must* be handled through the purchasing department. In the past two years there have been four different federal agencies in charge of surplus disposal. Regulations, personnel in the bureau, and sales programs are constantly changing. The purchasing department has kept abreast of these changes as they occur. It would be impossible for any individual not working continually with these agencies to function effectively. There are specific certifications, also, that must be made by an authorized individual of the University in order that our proper discounts may be secured for our departments.

#### **Inter-Department Transfers**

In an institution as highly departmentalized, as complex, and as large as Emory University, there inevitably occur over a period of years shifts of function, emphasis, and staff in various departments. This results, often, in items of

equipment or supplies becoming surplus to one department while they are needed by some other department of the University.

The purchasing department, with the advice of the Treasurer and Business Manager, will work out methods of shifting such items between departments. Budgetary fund transfers, mutually agreeable to the department heads concerned, will be made at the time such transfers of the physical properties occur.

The Supervisor of Purchases will be generally responsible for Uni-

versity inventories and storerooms. He shall work with the respective storekeepers and department heads concerned in determining the quantities, variety, and standards of quality of items which are commonly carried as working inventory in our various storerooms.

The Business Office maintains inventories of commonly used office supplies which may be secured from the Multigraph room. Catalogs of these items are issued periodically. It is highly desirable that departments generally adapt their proce-

dures to using the office supply items which we carry in stock. This results not only in appreciable cash savings for departmental budgets, but eliminates many small orders to outside vendors.

Departments may also secure items from the storeroom maintained by the Department of Buildings and Grounds and from the Emory University Hospital Storeroom if these departments have a sufficient supply of the commodities needed at the time the request is made.

**T**HE budget of the Department of Buildings and Grounds is intended to cover the cost of general maintenance and repairs to the physical plant, operation of the buildings, and the utilities system. All self-supporting activities such as dining halls, dormitories, etc., shall bear a pro-rata portion of the maintenance and utility expense as agreed upon by the Treasurer and Business Manager, the Superintendent of Buildings and Grounds, and the de-

## DEPARTMENT OF BUILDING AND GROUNDS

partmental heads concerned. Instructional, research and service departments are expected to assume out of their respective departmental budgets or special appropriations

the original cost, cost of installation and maintenance cost of their departmental equipment and furnishings. Departmental equipment and furnishings are considered to be that equipment which is an integral part of the department and which would be moved along with the department if it changed location.

Any requests or information concerning utilities, janitor service, repairs to the physical plant and care of grounds may be obtained by referring to the Superintendent of Buildings and Grounds or to the Business Office.

Those items of expense that are ordinarily charged to the budget of the Department of Buildings and Grounds and those to be charged directly to departmental budgets are summarized as follows:

### *Work Charged to Buildings and Grounds Budget*

A. General painting and plastering done for the preservation of the property.

B. General plumbing and heating repairs.

C. General lighting repairs and maintenance of lighting circuits.

D. Furnishings and repair of blackboards and classroom chairs.

E. General building & departmental locks.

F. General building repairs.

G. Janitor service.

### *Work charged to Departmental Budgets*

A. Special furniture and equipment made for department, such as

Form 4		<b>JOB ORDER VOUCHER</b>	
EMORY UNIVERSITY OFFICE OF THE TREASURER AND BUSINESS MANAGER		DATE _____	
DEPARTMENT OF BUILDINGS AND GROUNDS			
PLEASE FURNISH LABOR AND MATERIALS FOR THE FOLLOWING:			
(Give complete details as to location, order, class, specifications, etc.)			
REQUESTED COMPLETION DATE _____			
DEPARTMENT _____	ESTIMATE (if any)		
REQUESTED BY: _____	Labor . . . . .		
DEPT. HEAD OR ADMINISTRATIVE OFFICIAL	Materials . . . . .		
APPROVED: _____	Total . . . . .		
TREASURER AND BUSINESS MANAGER	Encumbered _____		
COMMENTS BY SUPERINTENDENT OF BUILDINGS AND GROUNDS:			
DATE STARTED _____ DATE CLOSED OUT _____			
COST OF: — SUPERINTENDENT OF B. & G. _____			
FINAL COST		EXPENSE CLASSIFICATION	
Labor . . . . .	_____	CHARGE ACCOUNT _____	
Material . . . . .	_____	CREDIT ACCOUNT _____	
Total . . . . .	_____	POSTED _____	
JOB AND COST APPROVED: _____		JOB ORDER No. _____	
DEPARTMENT HEAD		LEAVE BLANK	
CHARGE APPROVED: _____			
TREASURER AND BUSINESS MANAGER			

The Job Order Voucher serves as a requisition for requirements where labor is involved



book cases, cabinets, counters, etc.

B. Repairs to and installation of such furniture and equipment.

C. Changing of facilities, partitions, etc., purely for convenience of department.

D. Furniture and equipment of faculty offices.

E. Special locks, extra keys, lighting fixtures, etc., requested by departments.

F. Special paint jobs.

The above classification is not meant to be all-inclusive but is indicative of various services rendered by the B & G Dept., some of which are the responsibility of the Department of Buildings and Grounds and others are of the departments concerned.

#### *Job Orders*

All departments desiring to have equipment constructed, repairs made, or other work done which involves the expenditure of labor and materials should use the following procedure:

A. If the proposed work involves an appreciable amount, write up in duplicate complete requirements in detail, have the department or divisional head approve and forward direct to the Supt. of Bldgs. and Grounds, requesting an estimate of the cost. The Superintendent has instructions to reject all requests for estimates which have not been approved by the proper official. Time and money are frequently spent making estimates which will definitely not be approved by departmental heads or the Dean because funds are not available.

B. The Supt. of Bldgs. and Grounds will complete estimates, retain one copy, and return the other direct to the department. He will make suggestions when proposed work appears unfeasible or unduly expensive and will cooperatively work out satisfactory specifications with the individual or department concerned.

C. For all work to be done and charged directly to a departmental budget, a "Job Order Voucher" (Form 4) must be made out in quadruplicate by the department requesting the work and forwarded to the Business Office. The "Job Order Voucher" serves the same purpose for job work involving labor and materials or labor only, that the regular requisition serves for actual purchases. In addition, when the work is completed, the voucher will serve as an invoice to the department.

The Job Order should be filled out only to the 3rd double line. The estimate should be summarized if

one has been secured. The Treasurer and Business Manager may hold the order until he has secured an estimate if he deems it advisable.

D. The Treasurer and Business Manager and the Supervisor of Purchases will approve the Job Order and give it a number.

E. The original copy will be retained in the Business Office, Copies 2 and 3 forwarded to the Buildings and Grounds Dept., and copy 4 will be returned to the requisitioning department with approval noted and with a number inserted in the lower right hand corner.

F. The Buildings and Grounds Dept., will schedule the work in accordance with the following considerations:

(1) Work already in progress.

(2) Urgency of the need (Allow as much time as possible).

(3) Availability of materials and labor.

G. When the job is completed, the blue copy will be billed and sent to the department for approval.

H. The blue copy should be approved and returned immediately to the Business Office. Any question as to the charge, workmanship, etc., should be taken up with the

Supt. of Bldgs. and Grounds.

I. When any information is required either from the Business Office or the Department of Buildings and Grounds, be certain to give the Job Order number which is assigned to the Job Order Voucher at the time of its approval.

#### *Emergency Job Orders*

In cases of an absolute emergency, call the department of Buildings and Grounds and state as clearly as possible the requirements for the job. This department has been ordered to delay action until a Job Order Voucher is received except in case of a real emergency. As soon as arrangements are made by telephone and the job is accepted, the department should make up the Job Order Voucher forms immediately, mark them "Emergency-Confirmation" and transmit them to the Business Office. The procedure will then be the same as in use for a regular Job Order request. This paragraph is intended to cover only those emergency jobs that involve departmental budget expenditures. *It does not involve emergency repairs chargeable to the buildings and grounds budget.*



"They say he's written up more cancellations this month than any man in the firm."

# LINED STEEL CONTAINERS

Protection of contents against contamination by the base metal is an important consideration in the packaging and shipping of many products

● By E. L. Cady

THE purpose of applying a special lining to a steel drum, barrel or pail, in nearly all instances, is to protect the contents of the container against contamination which can result from chemical reaction between the contents and the container walls.

There are rare instances in which the chemical reaction can become so severe that the container strength is threatened. But for the most part the reaction is too slight, too self inhibiting for that. And after all, protection of its contents while in storage or shipment is the reason for using a container.

Cases could exist in which rusting of the container interior surfaces, or other such corrosion, even though slight, could make the container unfit for use for given types of contents. No such cases were found while researching for this article, but the possibility should be mentioned.

The linings attempt to bridge part of the price gap between plain carbon steel containers and those made of stainless steel or other high cost alloys. In rough generalization, a stainless steel container of the barrel, drum or pail type costs twenty times as much as a comparable container made of plain carbon steel; whereas a lined carbon steel container costs approximately 35% more than a plain unlined container. The stainless steel cost is justified for many applications, but it may be prohibitive in other cases. Sound purchasing practice dictates that the possibility of achieving comparable results through the use of linings should be explored. This would require a more exact knowledge of relative costs. For these

more accurate figures on specific containers, inquiry should be made to the container makers.

Most of the lined containers are of the plain carbon steel types, either hot rolled or cold finished steel. There have been instances of linings being applied to galvanized containers, the reason being that the galvanizing is subject to zinc oxidation which produces a "white

to be proof against all of the thousands of products which might be shipped in containers. A list which will indicate the products for which linings are generally recommended is produced here. The list should be regarded as suggestive rather than comprehensive. No such list is likely to be fully complete, since it is unlikely that the maker of linings would know all of the purposes for which lined containers are being sold by the container makers.

## Finding a Lining

When a lined barrel for a given product is desired, the Purchasing Agent usually makes inquiry to the container makers as to whether or not they have had experience with such containers for the product to be shipped. The container makers either answer the inquiry from their own experience records or else pass it along to the makers of the lining materials. In cases of doubt the lining materials maker supplies a cup, about the size of a coffee cup, lined with the recommended material.

This cup may be tested by filling it with the material which is to be shipped and letting it stand on a laboratory shelf, or by filling it and applying a cover which will exclude the air and then letting the cup stand, or by such other methods as are found practical by the laboratory.

For satisfactory use, the lining itself should be inert or at least non-contaminating to the product to be shipped, and should also prevent the product from being contaminated by the container wall. Care should be taken to make the test severe but to make sure that any contamination

## WHAT TO LOOK FOR in selecting a lined container

### Properties of the liner:

- Inert to contents
- Inert to base metal
- Stable to heat and humidity
- Tough and flexible

### Method of application:

- Complete coverage, with particular attention to seams and welds
- Single or multiple coats
- Proper drying procedure

dust" that can contaminate 100 octane gasoline and some other products. The linings either prevent the formation of this dust or else form barriers through which it is unlikely to pass into the contents of the container.

Linings have not been developed

found is between the material and the container and is not a reaction between the material and the air or is not some other effect which would not occur between material and container in normal use.

#### Sales Promotion Interest

The interest of the container makers and of the lining materials makers in solving the application problems of linings can be estimated by some rough figures. In a normal year the steel shipping container industry may be expected to produce 22,000,000 heavy gage (18 gage and heavier) barrels, of which at least 2,200,000 should be lined; 10,000,000 light gage containers, of which at least 500,000 should be lined; and 60,000,000 pails, of which 6,000,000 should be lined.

On a fair added price for the lining as against the unlined containers this will add some \$3,300,000 a year to the sales volume which the container industry would have if none of its products were lined.

On the same basis the sales volume to the makers of lining materials will be about \$1,000,000 a year. But most of these materials are made by companies which also make lining materials for cans and for bottle crown caps and for large tanks and other usage.

Altogether, the sales volume in sight is not large enough to indicate any strong interest until the time comes when container sales become harder to make than they are right now. In the meantime, the Purchasing Agent whose company products would benefit by lined containers

may have to apply much of the pressure which results in his getting them.

It would be rare for a user of containers to buy them in the unlined condition and apply the lining materials. But some companies which use returnable containers may wish to reline them. And the application method used by the container maker can be important to the protective quality of the lining.

#### Application Methods

Steel shipping containers are divided generally into "tight" and "open end" types. The tight ones are not necessarily any more leak-resistant than well gasketed open end containers. A "tight" type has its ends welded or seamed or riveted in and has only a small bung or other openings for emptying and filling. An "open end" type has all or a large part of one end removable for filling and emptying.

The tight types are more difficult of access for applying the linings to their interior surfaces and for inspecting the linings. Methods of applying the linings are alike for all types.

Lining application is by spraying or other methods similar to painting, followed by baking. The baking temperatures vary with different lining materials.

*Method 1.* This is the most common method. The container interiors are sprayed by ordinary or by special spray guns, after which the linings are baked.

*Method 2.* The spraying is accompanied by electrostatic deposi-

tion of the lining materials, after which the linings are baked. This should result in more complete coverage and in more economical usage of the lining material.

*Multiple Coats.* One coating of material may be sufficient for the purpose of the container. But since any spray application may leave minute pinholes or other uncovered areas, two coats are desirable when the functioning of the lining is highly critical to the protection of the packaged material. In the majority of cases one coat is enough.

*Method 3.* The materials are applied to all interior surfaces before the containers are finally assembled. It thus is practical to make a close inspection for completeness of coverage. This is of special application to tight containers and to open end types of the kinds which have only restricted areas of the ends open.

If the containers are to be assembled by welding, then stop-off masks or other protections must be applied to the areas at which the welding will be done. These areas are comparatively small. The welding heat may disintegrate the coating materials at additional areas adjacent to the welds.

After assembly, the welded areas and those adjacent to them are sprayed. This results in at least a mild second coating of the entire interior and a full second coating of all areas close to the welds.

This progressive method may be more costly than the others, although among the thousands of designs of containers there could be some for which it would be even less costly.

*Baking Problems.* Baking temperatures range generally from 350 to 450 degrees Fahrenheit, depending upon the coating material. For many materials they must be held closely. Baking time usually requires a container to be in the oven for at least 25 minutes. Since containers are bulky in relation to their weights, the ovens need to be large, to have provisions for making the most use of heating by recirculated air, but they need not be high in heat capacities. Waste heat could be used by plants which have it.

Infra-red heating in conjunction with recirculated hot air or with the use of waste heat to supply the bulk of the BTUs might be highly economical.

The baking problem alone is enough to discourage the average container user from applying its own linings.

Inspection of the finished product usually is visual, aided by the use





of specially focussed lights and perhaps by mirrors. Electrical instruments exist by which the thicknesses of coatings over sheet metal may be gaged, but no cases were found in which such test methods are used.

#### Serviceability

All of the linings recommended by linings materials makers are, if properly applied, sufficiently shock resisting for ordinary service. But some are more flexible than others and should withstand more abuse of the packages.

The increase in flexibility appears to be gained at the expense of some protective abilities of the linings in respect to some products. This factor, therefore, cannot be gaged excepting in consideration of the product to be handled. No figures seem to be available as to how much gain in flexibility can be had, how much more of a dent one lining will stand as compared to another before the lining will fail. But at least one large user of lined containers prefers to specify a lining which its own test laboratories have found to be more flexible.

Flexibility is important mostly when containers are to be returned, refilled and reshipped. And excepting as companies do so in intra-plant or other intra-company activities, reshipping of common steel containers is not common. The costs of obtaining and handling returns are frequently higher than those of new containers.

Lined barrels often are bought on agreement that the barrel maker guarantees the functioning of the lining for a single trip of the filled container. For reshipping purposes the responsibility of cleaning and decontaminating the container belongs to the shipper. Linings for these purposes should be of types which may be cleaned with live steam and by other methods suitable for the product to be shipped.

#### Colors and Sales Values

The ordinary lining material is light brown in color and is translucent enough so that the color of the lining is largely dependent upon that of the underlying body of metal. Applied over black steel the lining looks dark brown. Applied over bright steel it is a pleasant golden color.

Some linings are of special white colors for their values as sales incentives. Such a lining is, for example, highly attractive to the baker who receives baking materials in an open ended drum. Light brown or

(Please turn to page 314)

## CHECK LIST OF PRODUCTS

For which lined containers are recommended

### ANIMAL AND VEGETABLE OILS

Almond Oil  
Castor Oil  
China Wood Oil  
Eucalyptus Oil  
Essential Oils

Fatty Acids  
Fatty Acid Derivatives  
Fish Oil  
Linseed Oil  
Oleic Acid

Perilla Oil  
Pine Oil (Gum)  
Pine Oil (Wood)  
Stearic Acid Chloride

### CHEMICALS

Acetic Anhydride  
Acetone, Monochlorinated  
Ammonium Nitrate  
Calcium Hypochlorite  
Dimethylamine Sulphate  
Formaldehyde, Aqueous

Glycerine  
Iron Chloride Solution  
Lactic Acid  
Magnesium Hydrate  
Magnesium Silicofluoride  
Milk of Magnesia

Naphthenic Acid  
Phosphoric Acid  
Pyridine  
Sodium Sulphide  
Stearyl Chloride  
Zinc Chloride

### FOOD PRODUCTS

Apple Butter  
Beer  
Butter  
Caramel Coloring  
Concentrates, Soft Drink  
Diamalt  
Edible Lactic Acid  
Edible Oils, Hydrogenated

Glucose  
Honey, Strained  
Lard  
Malt Solution  
Marshmallow Creme  
Milk, Condensed  
Milk, Evaporated  
Mustard, Wet

Oleomargarine  
Pepper  
Salad Dressing  
Sorghum Molasses  
Syrup, Cane  
Syrup, Sugar  
Vitamin Solution  
Wine, Dry

### PAINT AND RELATED PRODUCTS

Adhesives  
Basic Casein Emulsion  
Casein Paint

Ink  
Resin  
Turpentine (10% Water)

Varnish  
Varnish Oils  
Wax, Floor

### REFINERY PRODUCTS

Base Oil A  
Ether Petroleum  
Gasoline, Aviation  
Grease, Lubricating

Hydrocarbon Solvents  
Lubricating Oils and Compounds  
Mineral Spirits  
Naphtha, Hydrogenated

Oil, Sulphonated  
Oils, Transformer  
Petroleum Jelly  
Petroleum Solvents

### SOAP PRODUCTS

Dry Cleaning Fluid  
Soap, Acid Soluble

Soap, Liquid  
Soap, Perfumed

Soap Powder, Dry  
Water Softener

### SOLVENTS

Acetone  
Amyl Acetate  
Amyl Alcohol  
Benzol  
Butyl Acetate  
Butyl Alcohol  
Butyl Lactate

Carbon Tetrachloride  
Ether, Sulphuric  
Ethyl Acetate  
Ethyl Alcohol  
Ethyl Alcohol, Denatured  
Lacquer Thinners  
Nitroethane

Nitromethane  
Nitropropane  
Propylene Dichloride  
Toluol  
Turpentine (Gum)  
Turpentine (Wood)  
Xylol

# DO YOU KNOW HOW TO READ?

● By Beryl Batten

**B**USINESS is conducted largely on the basis of printed and written documents—forms, correspondence, and records. The essential information regarding a transaction is there in black and white for the benefit of the person handling the document. Presumably it is there to assure that the matter will be handled correctly, promptly, and without lost motion.

Why, then, do we find so many simple errors leading to confusion, delay, and useless correspondence? We ascribe these errors, in general terms, to "the human factor". Let's be more specific. In most cases they occur because people have not been trained to read. There is a vast difference between looking at a paper, seeing what is there, and reading it with understanding. A multitude of these papers pass over the desk, and some disposition is made of each. If the action taken is wrong, the error is discovered some days or weeks later and the work has to be repeated. In the great majority of cases it is apparent that careful reading would have avoided the error, but the person at fault has not looked for the key notation or entry that would have put him or her on the right track at the outset.

The billing department issues an invoice for a small order, only to have it returned with a letter pointing out that the shipment was sent C.O.D.

An order is received and put into the regular channels. Days later, after the order has passed through several hands and is ready for shipment, some one discovers that the order was intended for another company. The company could easily get a reputation for dishonesty because it had failed to read.

The credit department is out of balance for three months, in the amount of ten cents. Hours of checking back finally reveal that an account had been closed out when the customer had lacked ten cents of making its check in full for the amount due. Some one hadn't concentrated in reading the figures.

Orders are duplicated. Express and freight has to be paid on the returned goods. Some of the merchandise becomes damaged in tran-

sit and has to be sold at reduced prices. Some one failed to read the notation, "Confirmation. Do not ship", although it was stamped in large letters on the confirmation slip.

An incoming letter reads, "Please cancel order 1246 and issue credit memo." The company follows instructions, only to find that the order had been cancelled several weeks earlier and credit given.

A newly appointed purchasing agent advises his suppliers that his predecessor is no longer with the company and asks for a change to be made on their mailing lists. For months afterward, he receives duplicate copies of all their sales literature, one addressed to him and one to his predecessor, because his letter has been half-read.

The slip that says "Detach and return to customer" is sent to the file with the other correspondence. The company wonders why the customer keeps asking for confirmation and delivery information.

An outgoing letter is addressed to Washington, D. C., instead of to Washington, Penna., and is returned several days later, stamped "Addressee unknown". A reference to the file is necessary to send the letter belatedly to its proper destination. There is a "Washington" also in eleven other states. There are nine "Mount Vernons", eleven "Springfields", ten "Newports", five "Newarks". The list might be extended almost indefinitely.

An incoming letter has plainly printed in red in the upper right hand corner: "Reply to New York Sales Office, 420 Lexington Avenue, New York 17, N. Y." But since the company letterhead shows St. Louis as the company headquarters, the reply is sent there. The people at the main office are perplexed, knowing nothing about the original inquiry, and the correspondence lies around until the New York Sales Office institutes a follow-up.

Filing is a continuous process of reading, and a card or letter misfiled is oftentimes hopelessly lost. The file clerk does not always have the opportunity of becoming familiar with the nature or details of a

transaction that might give a clue to proper handling. And carelessness in reading can become a fatal habit.

In one nationally known organization, the sales department had a geographic set-up of customers, filed by states. In a spot audit, the 2,000 cards in a drawer labelled "West Virginia" were found to include 51 Virginia cards, 14 Vermont, 3 Washington, 1 Texas, and 1 Georgia.

In another large and reputable company there was a file drawer labelled "Los Angeles". Along with the cards of this city were found: Big Bear City, Big Bear Lake, Lewiston, Lindsay, Lomita, Lone Pine, Long Beach, and Los Banos.

Why could this happen? The people who put away the records had not been trained to read the particular type of matter, the key information, on the cards they were handling. They had not even been cautioned about the mistakes that could happen. The supervisor had merely pulled open a drawer and said: "This is the prospect file. All you do is put the cards in this drawer."

Since filing is a continuous process of reading, it is very important that those in the filing department know how to read and understand the particular type of material they are handling. The filing department should be staffed by people of intelligence and broad background, people with the ability to read and to analyze what they read. Some one has said that we go to college primarily to learn how to read. Why, then, fill up the filing department with the left-overs of the office staff?

On two occasions I have seen executives take over the filing for a day. The result was a deeper appreciation of the problems involved and a knowledge that only trained people should deal with the records.

Everyone in the office, upon undertaking a new assignment, should be given a course in reading—in rapid, accurate reading of the specialized forms or papers they will be handling. Intelligent reading is predicated on knowing what to look for, what it means, and what to do about it.

# PRODUCT DELIVERY INFORMATION

Shorter delivery time for numerous products is revealed in the August Delivery Information report. At the same time, little or no change in delivery time shown in previous reports is indicated by manufacturers for most of the products listed, evidencing that using departments should requisition their needs well in advance to assure delivery of material when it is needed.

The data is a practical guide for determining minimum inventory based on extended lead time and plant

usage of materials, and should also be of value in eliminating small and rush orders.

Especial attention is called to the fact that the indicated delivery time is in many instances the range of delivery reported by several manufacturers. We shall be glad to forward to the manufacturers furnishing the delivery data shown, requests for more specific information.

## DELIVERY TIME

Standard Products	Special Order
-------------------	---------------

**AIR COOLED ENGINES**  
10 months 15 months

**AIR EQUIPMENT**  
*Air Motors* 2 weeks  
*Compressors, Below 30#* 2 months  
*Pumps, Vacuum* 2 months

**ALUMINUM**  
*Sheet & Coil Products* 4 to 5 weeks  
*Extrusions* 4 to 6 weeks  
*Rod and Bar* 3 to 5 weeks

**AUTOMATIC CONTROLS**  
Immediate — 3 weeks 1 to 6 months

**BEARINGS**  
*Ball Bearings* 4 to 6 months  
*Bearings, Roller* 3 to 6 months  
*Bearings, Bronze* 12 to 14 weeks, depending upon type and quantity.  
10 to 24 weeks, depending upon type and size.

*Pillow Blocks* 12 months

**BELTING**  
*Leather* 3 weeks  
*V-Belting, Leather* 2 weeks  
*Stitched Canvas* 1 to 2 weeks  
*Endless Woven* 2 to 4 weeks  
*Woven Cotton* — —  
*Webbing* — —

**BRASS RODS**  
Stock-30 days 30 days  
*Brass Strip (gauges over .016)* — —

**BRONZE PARTS**  
*Extruded Bronzes* 3 to 4 weeks  
*Heavy Bronze Castings* 3 to 5 weeks  
*Light Bronze Castings* 3 to 4 weeks  
*Medium Bronze Castings* 2 to 3 weeks

## DELIVERY TIME

Standard Products	Special Order
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**BRUSHES**  
*Power Driven* 4 to 10 weeks  
*Maintenance Brushes* 4 to 6 weeks

**CHAIN**  
*Steel* 2 to 7 months  
*Iron Chain* 30 to 60 days  
*Machine Finished Roller* 12 to 20 months — —

**CHEMICALS**  
*Carbolic Acid*  
Tight: Annual production committed under contract. Shipments restricted to customers' monthly quotas.

*Nitric Acid — Sulphuric Acid*  
\* \* Same  
\* \* One company reports that shortage of carboys has hampered deliveries, rather than acid shortage.

*Formaldehyde*  
Very short supply. Cannot accept additional orders.  
*Chemical Process Equipment* 12 months 16 months

**CLEANERS**  
*Metal* — —  
*Parts Cleaners* 10 to 30 days 8 to 12 weeks

**COATING EQUIPMENT, INDUSTRIAL**  
*Baking Ovens* 6 weeks 10 to 24 weeks  
*Booths, Spray Painting* 6 to 16 weeks 12 to 16 weeks  
*Paint Spraying Equipment* 12 weeks 24 weeks

**CONTAINERS**  
*Bags, Paper* 30 - 60 days 60 - 90 days (also, spl. orders not accepted)  
*Boxes, Corrugated* — — 3 to 4 months

Current reports indicate that corrugated cartons are more abundant, and that immediate deliveries can be made in standard sizes of cartons by some companies. Price drops of 10% to 15% for cartons have also been reported.

*Boxes, Solid Fibre* 8 weeks Spl. orders not accepted  
*Boxes, Fibre, Cleated* 12 weeks 2 to 5 months (also, spl. orders not accepted)  
*Boxes, Paper, Folding* 6 months — Some prompt 7 months



DELIVERY TIME	
Standard Products	Special Order

8 weeks	Cleated Plywood, Shook	6 weeks
— —	Boxes, Wirebound	10 days
— —	Boxes, Wooden	2 months
— —	Crates, Wirebound	15 days
— —	Crates, Wooden	2 months
2 to 3 days	Cooperage Slack	2 to 3 weeks
1 week	Nail Kegs	2 weeks
1 week	Half Barrels	2 weeks
2 to 4 weeks	Cooperage, Tight	12 weeks

#### CONDENSER APRONS

— —	Chrome	30 days
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#### COOLANT SYSTEMS

Immediate		2 months
<b>ELECTRICAL</b>		
4 to 9 months	Cables, Wire	4 to 9 months
4 to 5 months	Cable, Insulated	4 to 5 months
1 to 3 months	Cables and Wire	5 to 6 months
20 weeks	Bare Copper Wire	20 weeks
20 weeks	Weatherproof	20 weeks
4-6 weeks	Wire, Insulated	6-8 weeks
3 months	Wiring Devices	6 to 8 months
1 to 5 months	Conduits, Flexible	1½ to 6 months
60 days	Raceway-Fittings	90 days
— —	Generators	12 months
<b>Motors, Polyphase</b>		
1 - 15 hp		
60 weeks, slightly shorter on strictly standard	20 to 75 hp	
42 weeks	Up to 200 hp	
62 weeks	Fractional hp	
All fractional except aircraft		
2 years		

#### SWITCH GEAR

Breakers		Air	Oil
Up to 2.3 K.V.	45 weeks	45 weeks	
2.3 to 6.6 KV	85 weeks	45 weeks	
Over 6.6 KV	85 weeks	85 weeks	

#### Capacitors

Up to 180 days, depending on rating of units desired in series parallel combination.

#### Transformers (Distribution)

1½ to 50 KVA — on allotment  
75 to 100 KVA — 12 to 15 months  
100 to 500 KVA — 15 to 18 months

#### (Power)

66 to 5000 KVA — 15 to 18 months  
5000 KVA and over — 2 years

#### GASOLINE ENGINES

10 to 12 months	Air-Cooled	— —
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DELIVERY TIME	
Standard Products	Special Order

#### FASTENERS

6 months	Bolts, ⅝" and under	6 months
3 months	Bolts, Larger	3 months
10 to 12 months	Bolts, Stove	
Stock	Nuts, Self-Locking	
	Semi-Std. 45-60 days	
	Specials 30 to 120 days	
12 to 16 months	Nuts, M/Sec Size	
6 to 12 months	Nuts, Bolt Sizes	— —
12 to 14 months	Machine Screw Nuts	— —
90 days	Semi-Finish Nuts	90 days
3 to 12 months	Cap Screws	— —
8 to 10 months	Machine Screws	8-10 months
— —	Milled Specials	2 to 3 months
	Headed Specials	5 months
6 to 12 months	Phillips Recessed Head	
10 to 12 months	Sheet Metal Screws	— —
4 to 8 months	Self Tapping Screws	
Stock to 2 weeks	Socket Head Cap Screws	1 to 4 weeks
1 to 2 months	Headless Set Screws	— —
Stock to 3 weeks	Socket Head Set Screws	1 to 4 weeks
6 to 7 months	Square Head Set Screws	— —
4 months	Rivets	4 months
20 to 30 days	Washers, Flat	15 to 20 days
5 to 6 months	Wood Screws	5 to 7 months

#### FELT PRODUCTS

2-3 weeks	3-4 weeks
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#### FITTINGS

3 to 12 months	Brass, Bronze	— —
Stock to 60 days	Copper or Bronze Fittings, Solder Type	
Stock to 2 months	Tube Fittings	2 to 4 months
Small quantities Stock to 60 days	Malleable Iron	
Large quantities 6 months		
60 to 90 days	Stainless Steel Fittings	90 to 120 days
Stock to 60 days	Steel Tube Fittings	2 to 4 months
Stock to 4 weeks	Pipe Plugs	1 to 4 weeks

#### FORGINGS

— —	Brass or Aluminum	3 to 4 weeks
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#### FURNACES

4 to 10 weeks	Heat Treating	8 to 32 weeks
4 to 10 weeks	Ovens, Industrial	8 to 32 weeks
— —	Metal Fabrication	2 to 6 weeks

PURCHASING

DELIVERY TIME	
Standard Products	Special Order

### GAUGES

Immediate to 30 days	2" Pressure	30 to 60 days
Immediate to 30 days	2½" Pressure	30 to 60 days
Immediate to 30 days	2" Oxy-Acetylene	30 to 60 days
Immediate to 30 days	2½" Oxy-acetylene	30 to 60 days

### GEARS

2 to 8 weeks	Differentials	6 weeks to 10 mo.
— —		9 to 10 months

### GRINDING WHEELS

— —	Vitrified	4 to 6 weeks
— —	Resinoid	4 weeks
(Finished stock, 2 to 4 days; semi-finished, 4 to 8 days)		

### HOSE, FLEXIBLE, ASSEMBLIES

Stock to 2 weeks		30 to 90 days
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### HOSE

Stock to 20 weeks (depending on size and construction)	Molded, Braided	
Stock to 6 weeks (depending on size and construction)	Wrapped Hose	

### LEAD

2 to 3 weeks		4 to 6 weeks
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### LIGHTING EQUIPMENT

4 to 6 months	Fluorescent Units	8 to 12 months
Immediate		30 days

### HORNS, HOWLERS, SIGNALS

10 to 20 days		30 days
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### LUMBER

2 months	Creosoted	
2 to 3 months	Fir	Unobtainable
Delayed Delivery —	White Pine	
	Mills oversold	
2 months	Yellow Pine	
1 to 2 months	Cypress	Unobtainable

### MAGNESIUM

4 weeks	Sheet	— —
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### MATERIAL HANDLING EQUIPMENT

Stock to 4 weeks	Industrial Storage Batteries	
	Lead acid	6 to 12 weeks
1 to 4 months	Casters, Truck	5 to 6 months
4 months	Casters, Semi-Steel Plate	— —
3 months	Casters, Welded Steel Plate	
3 weeks	Assembly Conveyors, Belt	10 weeks
10 to 12 months	Conveyors, Belt	Indefinite
10 months	Conveyor Belting	10 months
6 to 9 months	Conveyor Belting, Rubber	6 to 9 months

AUGUST, 1947

DELIVERY TIME	
Standard Products	Special Order

### Conveyors, Coal

6 weeks		12 weeks
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### Conveyors, Roller Gravity

2 weeks	Light, Medium	6 weeks
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### Conveyors, Sand, Gravel

8 weeks		12 weeks
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### Conveyors, Inclined Belt, Stationary, Horizontal

6 weeks		12 weeks
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### Elevators, Bucket

4 months		5 months
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### Elevators, Hand

1 month		4 to 6 months
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### Elevator Belting, Rubber

6 to 9 months		6 to 9 months
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### Elevators, Portable Hand

3 weeks		6 weeks
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### Elevators, Portable, Electric

3 months		6 months
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### Elevators, Electric

2 months		4 to 6 months
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### Elevators, Portable, Tying

1 to 4 months		2 to 7 months
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### Pallets, Fork Lift

— —		10 days
-----	--	---------

### Skids, Lift Truck

1 month		
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### Tractors, Gasoline, Industrial

2 to 3 months		2 to 4 months
---------------	--	---------------

### Tractors, Electric, Industrial

1 to 2 months		2 to 3 months
---------------	--	---------------

### Trailers

### Factory-Warehouse

6 to 12 weeks		10 to 24 weeks
---------------	--	----------------

### Trucks, Hand, 2 wheel

1 to 3 months		6 mos. — indefinite
---------------	--	---------------------

### Lift Trucks, Hand

2 weeks		4 weeks
---------	--	---------

### Platform Trucks, Electric

1 to 2 months		2 to 3 months
---------------	--	---------------

### Jack & Skid Systems

2 weeks to 3 months		
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### POWER INDUSTRIAL TRUCKS

"Special truck. Delivery time will run from 9 to 24 months."

### Lift Trucks, Electric

1 to 3 weeks		60-90 days
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### Fork Lift Trucks, Gasoline

2 to 6 weeks	1500# to 10,000 #Cap.	8 to 10 weeks
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### Fork Lift Trucks, Electric, 3000 lbs.

1 to 2 months		2 to 3 months
---------------	--	---------------

### 4000 lbs. Fork

1 to 2 months		3 months
---------------	--	----------

### 6000 lbs. Fork

2 to 3 months		
---------------	--	--

### 6000 lb. Low-Lift

45 days		
---------	--	--

### Crane Trucks

2 to 9 months depending on capacity

### Platform Trucks (Stake-Rack)

3 months		6 mos. — indefinite
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### PACKINGS

#### Leather

3 weeks		4 weeks
---------	--	---------

#### Oil Seals

2 weeks		12 weeks
---------	--	----------

### ALSO SEE RUBBER PARTS

### PIPE

#### Brass

1 to 2 weeks		— —
--------------	--	-----

DELIVERY TIME	
Standard Products	Special Order

1 month	Pipe, Fabricated Carload, 3 to 4 mo. LCL, 6 to 8 weeks
---------	--

3 to 12 months (depending on supply of copper from refineries). Tube mill production is very uncertain.	Copper Pipe
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### PIPING

— —	Exhausts and Blow	1 to 3 months
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3 months	Steel, Welded, Riveted	Indefinite
----------	------------------------	------------

### PLASTICS

Mold Delivery, 8 to 20 weeks
Parts Delivery, 4 to 6 weeks

### PUMPS

4 to 6 weeks	Centrifugal	12 to 14 weeks
No motor — 12 weeks		24 weeks

16 weeks	Power Pumps	24 weeks
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24 weeks	Pumps, Hydraulic	
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4 weeks	Turbine	12 to 14 weeks
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### RUBBER PARTS, SYNTHETIC

2 weeks	Extrusions	2 to 3 weeks
---------	------------	--------------

3 weeks	Molded Parts	3 to 6 weeks
---------	--------------	--------------

— —	Die Cut Parts	2 to 3 days
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2 to 3 days	Sheet Rubber Packing	
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2 to 3 days	Synthetic Sheet Rubber Packings	
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2 weeks	Synthetic Rubber Sheets	
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2 weeks	Synthetic Rubber Rolls	
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### SCALES

3 to 4 months	Platform, Portable	6 to 12 months
---------------	--------------------	----------------

2 to 8 months	Truck, Wagon	6 to 11 months
---------------	--------------	----------------

### SCREW MACHINE PRODUCTS

— —	Brass, Aluminum, Steel	45 to 120 days
-----	------------------------	----------------

— —		2 to 3 weeks
-----	--	--------------

### SPRINGS

— —	Extension, Compression	
— —	Torsion	

— —	Spring Stampings	45 to 60 days
-----	------------------	---------------

— —		90 to 120 days
-----	--	----------------

### STEEL, CARBON

5 months		7 months
----------	--	----------

### SPEED REDUCERS

8 weeks		10 to 14 weeks
---------	--	----------------

### SPROCKETS

4 to 6 weeks		6 to 8 weeks
--------------	--	--------------

6 to 12 months	Cut Tooth Steel	— —
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8 to 15 months	Cut Tooth Cast Iron	— —
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DELIVERY TIME	
Standard Products	Special Order

### TAPES

2 weeks	Masking	— —
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Stock to 2 weeks	Electric	4 to 6 weeks
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Stock to 2 weeks	Cloth Back	4 to 6 weeks
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### TEXTILE EQUIPMENT

12 months		18 months
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12 months	Textile Finishing Equipment	16 months
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### TIN

10 days		2 to 3 weeks
Conservation Order M-43 places limits on pig tin.		

### TRANSMISSION BELTING

Stock to 24 weeks		24 weeks
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Stock to 2 months	Flat Transmission, Rubber	4 months
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Stock	V-Belts, Rubber	12 weeks
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### TUBING

4 weeks	Aluminum	— —
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2 to 3 weeks	Alloy	— —
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2 months	Stainless Seamless and Welded Tubes	4 months
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### VALVES

Stock to 30 days	Brass	— —
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Stock to 30 days	Bronze	— —
------------------	--------	-----

Stock to 60 days	Bronze, Solder Type or Threaded	
------------------	---------------------------------	--

Stock to 60 days	Valves, Iron	4 to 12 months
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Stock to 120 days	Valves, Steel	
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1 week	Hypressure Jenny Steam Cleaner	4 to 6 weeks
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Stock to 30 days	Valves, General	60 days
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30 to 90 days	Stainless Steel	90 to 120 days
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### WIRE

Immediate to 2 weeks	Aircraft Cable Wire	6 to 8 weeks
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6 to 8 weeks	Card Wire	5 to 6 weeks
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— —	Wire Forms	3 to 4 months
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24 weeks	Constantan	— —
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20 weeks	Iron	— —
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10 weeks	Platinum	— —
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### WIRE CLOTH

10 months	Insect Screen	Beyond 10 months
	Copper, Bronze, Aluminum	

8 to 10 months	Standard Hardware Cloth	8 to 10 months
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1 week to 3 mos.	Coarse Industrial Cloth	2 weeks to 3 mos.
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4 to 7 months	Fine Industrial Cloth	4 to 7 months
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Prosperity and peace depend on putting our business house in order now and preventing a depression that can only lead to further compromise with sound economic principles

## FIX THE ROOF WHILE THE SUN SHINES

By Grey Leslie

**M**ANY of us may remember the story in our early school copy-books about the fellow who made high resolve to fix his leaky roof when the rain was pouring through it, but who forgot all about it when the sun shone again. It was a simple tale addressed to adolescents to point a simple lesson. But like most simple lessons of the copy-book type, it has retained its subtle implications.

There is no doubt that a vast number of people feel pretty positive that before very long our economic roof will leak badly enough to let in a flood of the ugly mess that makes a devastating depression. Whether it will come as a steady rain or a cloudburst, or when, few presume to predict. But that it will come, a great number feel certain.

### Stormy Weather Ahead

The fear of a depression is a global ailment; and oddly enough it is more rampant in the United States at the present time than elsewhere. Little if anything of account, in or out of government, has been done to appreciably diminish this gnawing, enervating fear. Much seems to be being done, unwittingly perhaps, to intensify it. The futile diplomatic maneuverings, gestur-

ings, mutterings and fustian abroad; the interminable political wrangling about labor, taxes, tariffs and treaties at home; rising costs; retail price slashings; vexatious shortages; sporadic black and gray markets; strikes and stock market oscillations—all of these are hardly conducive to comfort or confidence.

There is nothing chimerical about it, nor can it be lightly regarded.

It is generally admitted that an acute depression in America would not only sear the fortunes and careers of every one of us, it would do irreparable damage the world over. If the richest and most powerful democratic nation in the world gets into serious economic trouble, the Marxist elixir is already mixed and bottled, and is in willing hands for dosage to discouraged, disheartened, even desperate peoples throughout the world. Some have already been temporarily doped with it; even some people here at home.

The continued and strengthened economic stability of the United States is not only the bulwark of our own democratic freedoms, but it is the very basis of any structure of world peace.

The headlines and editorials in our responsible press compel our attention to the fact that order and progress depend upon economic stability. The most responsible thinkers the world over agree that progress and order depend upon prosperity. We now know that prosperity and full employment at home depend, in part at least, on foreign trade and on the complex international financial arrangements to which the United States is a principal party. It is axiomatic that a minimum of economic security is a necessary prerequisite to any real democratic government. But there is much more prosperity at stake in this serious business. The hope of any semblance of world peace depends on it.

### Past Expedients

The sun is shining now, and, while it may be a little clouded on occasions it probably will continue to shine, maybe even brighter. So why worry and fret about a rain-storm? But we did have a pretty bad storm after another World War in 1920 and a still worse storm in 1929. Only a confirmed Pollyanna can naively believe that it will not rain again. Meanwhile some of us *know* that our economic

roof needs repairing. If we remember the maxim of the copy-book, this would seem to be a good time to mend the leaks.

Let's see how we tried to fix the leaky economic roof before, and what tools we used. Didn't we try an emergency kit called NRA? That didn't seem to do even an emergency job. Didn't some experts tinker with the price of gold? Didn't we fiddle around with schemes called WPA and PWA and NYA and AAA? All that most of us remember about them was the invention of a score of derisive words, like "boondoggling", "gobbledegook", and such. Didn't we experiment with price guarantees, unemployment insurance, and new shufflings of alphabet schemes? The results in every case were disappointing and questionable, at best affording only the temporary relief of expediency. The one thing that gave us a taste of the old prosperity and full employment was an astronomical war expenditure at the price of a staggering increase in the public debt. We were too busy and worried about saving the very house itself to bother much about a leaky roof.

World War II was won two years ago, and since then we have been pretty busy struggling out of our armor, flexing tense muscles and taking stock generally. And now there is that damnable leaky economic roof to plague us.

#### Problem for the P. A.

As purchasing agents, we shall have to shake off more than armor. I think we shall have to shake off an accretion of habits and thinking that we acquired in the exigencies of war; habits and thinking, methods and procedures that may have been satisfactory in meeting a wartime emergency but are serious impediments in meeting our new and tremendous responsibilities.

We have a justifiable pride in our accomplishments during the war period. Management, by and large, has not been niggardly in its recognition of purchasing agents' importance and talent. We can have no reasonable complaint of having been denied our magnificent opportunity for service. But the functions of industrial buyers have been so broadened and their operations so closely connected with production, sales and public relations, that it becomes necessary to have a thorough working knowledge of basic economics. In our new status as responsible members

of the industrial family sitting at the head table, we shall be expected to have well thought out opinions and advice, and to be able to defend them.

The accumulated difficulties of the postwar period have thoroughly proved the error of the tacit assumption that the transition from war to peace would be easily accomplished when the makers and users of swords turned themselves into the makers and users of plowshares. Purchasing men know, perhaps better than many others, the futility of trying to apply expedients offered by economic medicine-men in the daily task of purchasing the materials and the tools needed to keep the industrial mechanism running smoothly and in high gear. Since the close of this war a new batch of proposals, schemes, and plans have been presented as protections against a national rainy day. The old timers in the purchasing profession will easily recognize some of the old economic roof-fixing prescriptions that failed on trial, despite the new names and labels packaging the old dope. The newcomers in purchasing will do well to analyze them also.

#### Procurement or Purchase

For all of us, I think, the first habit we shall have to shed is the idea of substituting "procurement" for "purchasing". That sends us to the dictionary:

**PROCURE:** To bring into possession; to acquire; gain; get; to obtain by any means; (etc).

**PURCHASE:** To pursue; to seek eagerly; to pursue and obtain; to acquire by seeking; to gain, obtain or acquire. To strive; to exert oneself;—Eager pursuit; a seeking or getting anything, hence endeavor or attempt. (etc).

Studying these definitions a little, it seems to me that the one defining "procure" aptly fits our activity during the war. We most certainly did an outstanding job of procuring—obtaining by any means. It has a martial echo. Perhaps I may seem fussy, but in peace time, the dictionary definition of procure seems to me to have an implication of chicanery—a sort of black-gray-market echo. The elementary definition of "purchase" seems to me to indicate more clearly our present function. There is a challenge in it. A challenge to buy for a fair price rather than to obtain by any means. (It

is interesting to note that the United States Treasury has recently changed the name of its "Procurement Division" to "Bureau of Federal Supply".)

The title "Purchasing Agent" may lack some of the glamor inherent in the title "Procurement Officer", but I believe it more accurately describes one of our jobs as economic roof-fixers.

#### Today's Responsibilities

A return to the normal habits of "purchasing" instead of the more dramatic "procurement" will bring into view again the three fundamental pillars of the purchasing profession—Quality, Utility, and Cost.

We shall have to concern ourselves with buying proper quality, neither *ersatz* substitutes nor the arbitrarily up-graded stuff that the war and a pyramid of regulations forced upon us.

We shall have to examine and analyze closely our production requirements and specifications to discover the full commercial application of the scientific developments and worth while substitute materials of the war days.

We shall have to constantly augment our knowledge of production methods and techniques to fit the best materials into the production scheme.

We shall have to extend our knowledge of packaging and package methods to keep apace with the revolutionary developments in that field.

We shall have to channel the resourcefulness and imagination for which we were acclaimed during the war, into a research field of our own.

We shall have to keep constantly before us the twin beacons, cost and competition.

We shall have to be constantly reminded that inventory control, market conditions, new engineering, new distribution methods, and a whole train of concomitant intangibles affect the cost structure of everything that American industry produces.

We shall have to remember that the cost structure is made up of wages, raw materials costs, manufacturing, sales and management costs, and profits, and that purchasing occupies a keystone position in that structure.

In any new evaluation of a purchasing agent's qualifications to

(Please turn to page 324)

**A**N unprecedented number of employees have asked for wage increases during the past two years. In stretching the cloth in both directions, many of the requests have been granted; but with the inflationary trend, some of the successful bargainers have found themselves short-changed.

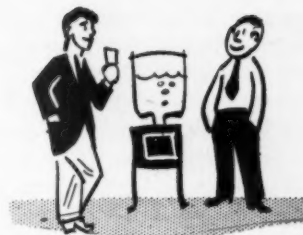
By no law of economics or physics can we lift ourselves by pulling or tugging at our bootstraps. Despite the avalanche of crackpot theories heaped about us, we have seen the solid truth of the economic axiom that wealth (the source and justification of wages) results from production—nothing else.

So, in view of the recent "now you have it—now you don't" wage increase, it is fitting and proper that we all take stock of ourselves and our position in order that we may accomplish something that will lift us to better standards. We can all help ourselves to a piece of prosperity, but it isn't so simple as asking the Boss for a 10% increase. And purchasing assistants have no collective bargaining status. Therefore, the following paragraphs are offered by way of friendly advice to those who would like to rise by a 20% or 50% standard of permanent prosperity.

#### The Boss's Viewpoint

First, let's examine this business through the eyes of the Purchasing Agent, the department head. Most of the PA's are pretty good fellows who have travelled the same route that you are now travelling. If we but knew, a lot of them spend considerable time wondering how they can make the staff members happier. The Purchasing Agent wants his department to receive proper recognition. He is not out of pocket when a buyer or other assistant is granted an increase, and he would be inclined to grant every request for an increase if it were in his power to do so. But we have seen the results of these "magic wand" increases and this experience is to be avoided again.

The Purchasing Agent is the boss of the procurement crew, and like every one of them he is an employee of the organization. He has certain functions to perform, he is guided by rules and precepts laid down by his superiors, and he works within certain limits of the organization. One of these limits imposed upon him and his group is the budget.



## SO YOU WANT A RAISE ?

• By Bob Ragase

There is no great mystery about the word budget. From our viewpoint in purchasing we can say that top management has set down a certain amount in dollars and cents which represents, in their opinion and analysis, the exact value of the entire procurement function. When they settled upon that figure, the Purchasing Agent knew that the sum included salaries, travelling allowances, telephone calls, telegrams, typewriter maintenance, light-heat-overhead, mistakes, paper clips, and every item connected with the department.

When the copies of the approved budget reached the Purchasing Agent's desk, he probably started scribbling a breakdown something like this:

*Total sum for twelve months' operation of entire department: \$50,000.*

(Now the Boss knows if he spends one cent more than that sum, an explanation will be required. Budget directors, treasurers, accountants and comptrollers are fine fellows, but they are all from Missouri. When budgets are drawn up, no department executive is given a sum to squander or mismanage in any way so the Purchasing Agent knows it will be a long hard pull to get through on that allotment. So he starts to divide the fund:)

1. Salaries .....\$.....
2. Stationery Supplies and

- Postage .....\$.....
3. Travel allowance .....\$.....
4. Overhead (heat, light rent, equipment, etc.).....\$.....
5. Maintenance of Equipment .....\$.....
6. Telephone and Telegraph \$.....
7. Loss and Error account \$.....

Some of these items come under the classification of a "fixed expense", and from past experience he knows that definite sums will have to be allocated to take care of those requirements. So he hasn't as much latitude as he might desire in regard to Item No. 1.

#### Great Oceans From Little Raindrops

In considering salaries, the Boss probably wishes he could call in a time study expert and have him explain who is giving less than a "sixty" performance and how he could get the whole staff to turn in an "eighty" performance. But even without the assistance of the stopwatch or micromotion camera, the Boss probably knows that Bill Smith's efficiency would jump twenty dollars on the month if he had a happier home life. He also knows that Joe Jackson is not up to par on those afternoons when the oat-burners are running. The sleepy-eyed stenographer at the far desk would be worth twice as much if her boy friend went home a few hours before dawn. The chubby little file clerk does pretty good except for the hour she steals every



morning to write a letter to a corporal in Germany; she has written a score of non-coms over a four year period, but none of them ever seem to come home.

All in all, the Boss tells himself, my gang wastes a lot of their own time and a lot of other people's time. If they concentrated on their work while they were here our value to the company would raise at least 30% and that 30% wouldn't be misdirected if it found its way into their pay checks.

To give his best performance, an employee must possess a happy combination of good health, fine mental attitude, normal home life, a respect for his job and everyone near that job. Anything working against the welfare of the employee is almost certain to reflect itself adversely in his daily production.

If the salaries were increased by the amount of wasted or misdirected stationery supplies, no tremendous increase would result, but combined with other small economies the result would be gratifying. It does not require many errors to ruin a dollar's worth of nine-part-carbon-interleaved purchase orders . . . the pencils Ed Smith carries home to his kids would buy him a hat . . . the little brunette secretary is known to be supplying her brother in college with all his stationery needs. Perhaps these things seem too petty to quibble about, but the Boss smiles because he knows who is paying the bill anyway.

Some employees smile at the conscientious efforts of department executives to reduce petty chiseling, but in so doing, they disregard one of the main objectives on which the postage meter business is founded. A whole plant could be carried off in three-cent postage stamps if no control were exerted.

Only the most parsimonious executives complain about expense accounts when a buyer makes a trip, because the wise ones recognize the value of a company representative travelling first-class. But George B. always wants to make the New Orleans trip during the Mardi Gras when holiday rates are charged and little business is transacted. Jim H. likes to juggle things so his New York trip coincides with the opening of the opera season and we all know how well Mrs. H. Loves music. The Boss smiles to himself because he doesn't care very much if George chisels himself a holiday or Jim merges

his wife's expenses into his own, but this would not be a very satisfactory explanation if the department exceeds the annual budget.

The matter of overhead and maintenance of equipment has always been a sore spot with the staff. They regard any economies here as the lowest form of penny pinching. A few reforms here would save a considerable amount, but in humoring the gang, it has added dollars to the budget.

For instance, consider that calculator on Walt Edward's desk. Walt says the machine makes him more efficient, but we haven't seen him use it three times in the past month. Perhaps Walt has never given any thought to it, but this department is charged for the depreciation on that machine at the rate of fifty dollars a year, which means we could pay him four dollars more on the month if he would put away the plaything. The maintenance contract on the calculator amounts to eighteen dollars annually and here we could add another dollar and a half on salary. Without considering all the items the accounting department attaches to that machine, someone—maybe Walt—is losing \$5.50 per month.

Our overhead for light and heat is charged on the basis of floor space. We couldn't concentrate in a smaller space because everything is crowded now. But if Bob Harris would consent to burning those old pre-war catalogues, we could do with one less table. If Miss Leslie would organize her stationery supplies, she wouldn't need two desks like she claims. If our files were audited currently, we could ship half of them to the dead archives in the warehouse. A few changes of this kind and we might juggle the saving into the pay checks.

Invention of the telephone and telegraph did much to speed up business, but some of our buyers rely too much on this speed and permit requisitions to pile up knowing that in an emergency the two instruments will come to the rescue. Recognition of the telephone and telegraph as emergency instruments instead of the normal means of doing business will reduce communication costs in a most gratifying manner. If a buyer would keep alert of needs and dead-lines, he can raise his salary by his own efforts. By sending one less telegram and making one less long distance call every day, there would be a saving of three hundred dollars a year

that could be put into the salary item of the budget.

Not all companies charge the Purchasing Department for the Loss and Error account, but in either case it is a distinct loss to the company. The sleepy-eyed girl who typed an order for a "9" ell when the edited requisition called for a "9" ell and had the item expressed half way across the continent is wondering why she doesn't get a raise. If Bill Boone hadn't accepted that coffee table from a certain vendor last Christmas, he could put the heat on them for adjustment of that defective material the Superintendent is growling about, but it is still charged to our L & E account. Judging by the shortages in pipe fittings, someone on the receiving platform is building a home and the plumbing costs are included in our budget.

When those who complain, growl, or joke about the economy of small items, they are not considering that the sum total of these savings could be divided proportionally among the employees and each would receive a substantial increase. The return to free competition means that the false standards of waste, established prices, and fixed wages must be abolished. Without these economies, many companies will face bankruptcy and their employees will face unemployment.

#### **What Have You Done For Yourself?**

The old axiom that we either progress or else we decline, leaves us to decide our course of action. In every Purchasing Department there are veterans who perform like novices and there are youngsters who behave like experts. Those who fail blame their backgrounds and lament that "they never had a chance." The background of every individual is different, but the one who succeeds is the one who recognizes today as the greatest of all days and makes this moment the moment of action.

By reading a few books, making a few inquiries, or memorizing a few facts, an employee can make his job easier for himself. In conquering his work he increases his ability and progresses toward bigger things.

Several years ago this magazine published a four-year curriculum in purchasing administration which was sponsored by the purchasing agent's association of a large city. At that time, this writer was living

almost a thousand miles away from those classes. However, the outline was so excellent, I copied it and resolved to read at least one book from every course listed. In reading at home, *a la* Abe Lincoln, I missed much of the information that is exchanged in the classroom, but it is an experience that is helpful to the buyer or clerk who works or resides away from the great centers of education. For the guidance of those interested, the curriculum is again listed:

#### FIRST YEAR

Introduction to Economics  
English Composition  
Principles of Economics  
Fundamentals of Business Organization

#### SECOND YEAR

Purchasing  
Marketing  
Purchasing Problems  
Fundamentals of Accounting

#### THIRD YEAR

Principles of Accounting  
Production Management  
Introductory Cost Accounting  
Personnel Administration

#### FOURTH YEAR

Business Law I.  
Corporation Finance  
Business Law II.  
Office Management

If you can master three good books—or one good book—on each of those subjects, your work will become as pleasant as a hobby. In mastering a book, you should not regard it as casual reading matter; but after mental digestion, apply its teachings to yourself and your position. Complete mastery of the entire sixteen phases outlined should raise your economic status by at least a thousand dollars a year.

America is certainly the land of opportunity so far as education is concerned. For a few dollars you can receive tutoring in mathematics, enroll in night sessions of a trade school to learn blueprint reading, study accounting at the YMCA, attend university extension courses in the strengths of materials, read business law at the local library, review English composition at a night high school or have a pleasant young lady coach your telephone diction. Even at the far outposts, Uncle Sam's mail carriers will bring you correspondence courses that have already helped many clerks to executive positions.

There is a hackneyed philosophy expressed by writers, teachers, and lecturers to the effect that by im-

proving our abilities, we can be of greater value to our employers. Without doubting one iota of that statement, is it not also true that we can be of more value to ourselves? Isn't it worth something to know what you're talking about?

#### Economy From Efficiency

Let us suppose that the efficiency of the personnel in our department can be increased so that the staff can perform eight hours work in seven. That hour is directly translatable into terms of reduced cost and overhead. The monetary saving will find its way into the purses of the employees, into dividend checks of the stockholders, into reduced unit cost of production thereby bringing about greater sales and profits.

At first glance there seems to be only a small gain to the company for any effort which reduces the "light-heat etc." overhead for one hour out of eight, but like the proverbial snowball that gains size and momentum as it rolls down hill, these small economies bring about others. For example, to finish his eight hours of work in seven, a buyer must reduce every eight minute long distance call to seven. Conferences with requisitioners and plant officials must be reduced similarly, thereby giving them more time for their other duties. But the biggest factor in the whole program of increased efficiency is the fact that the personnel have proved that they know their business and this virtue can bring about the ultimate in economy.

#### Plant Cooperation Pays

It is a primary function of the Purchasing Department to work out the material needs of the organization from an estimate (or estimates) submitted from the Production Department and considered in view of the stores inventory. The correctness of the final analysis of materials to be procured keeps down premium prices for rush shipments on one hand and on the other keeps down the overhead of large inventories.

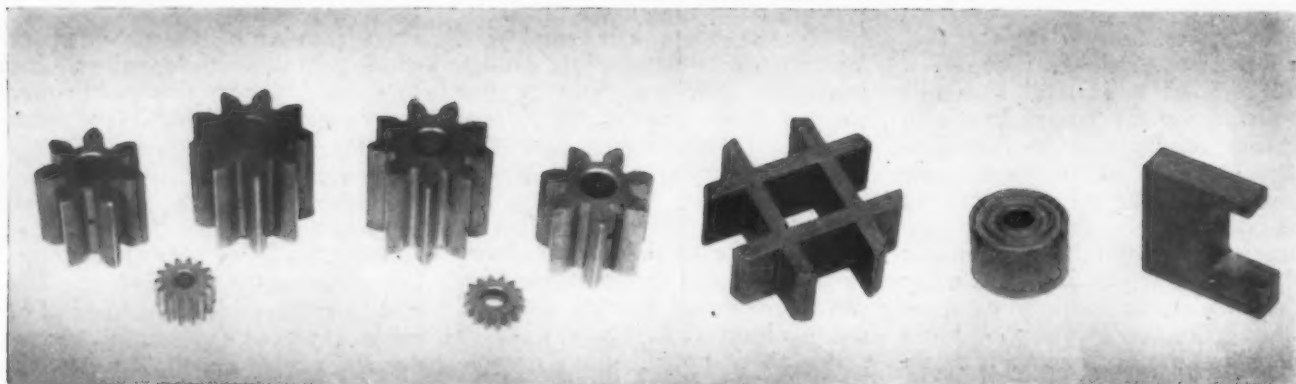
Proper cooperation by Traffic, Production and Purchasing departments in scheduling supplies can eliminate demurrage charges. Intra-plant transportation expense can be reduced by specific directions on the purchase order stating the point at which delivery is desired by the using or receiving department. While the business of scheduling supplies and deliveries is usually

the work of the department head, every member of the procurement group who is worth his salt will see to it that every requisition or order bears complete delivery instructions.

No Purchasing Department is entirely free of these "rush-rush" orders where the cost of procurement exceeds the price of the item procured. This is not good purchasing, but occasionally the need for the rush item justifies the expense because it prevents cessation of production, protects capital investment or otherwise results in a greater saving. But these occasions should not be numerous because careful planning would eliminate many of these rush emergencies. Production men are prone to discount the cost of these emergencies stating: "Your telephone call—your telegrams—and the express charge didn't cost over thirty dollars at the outside, and we saved three hundred!" Perhaps there is a lot of truth in that reasoning, but many times the same material could have been procured at a cost of only three dollars. These emergencies are costly and drain the purchasing budget of funds that should be directed to other phases of procurement.

The buyer is certainly not responsible for Acts of God that necessitate rush shipments or expensive expediting, but he is charged with the immediate placement of every requisition assigned to him and he is duty bound to see that delivery is made in accordance with the requisitioner's direction. If the buyer gains the respect of the requisitioners by securing delivery of the goods according to their specifications, he sets an example for them to follow in requesting materials in sufficient time to avoid rush shipments and premium rates. This respect is the groundwork for cooperation between the departments, and every emergency that is eliminated is worth consideration in the pay checks of these employees who protected the company's till.

It has been said that the reason the dollar does so little for us today is that we are not doing much for the dollar. There is more truth than humor in that statement and the purpose of this article is not the encouragement or justification of penny-pinching, but rather is a challenge to its readers to look about their desks and see what can be done to put more gold in the dollar. Money is like any other commodity—it is not worth having if it isn't worth working for or saving.



Typical parts produced by powder metallurgy

## POWDER METALS HAVE MANY USES

Mysterious force of cohesion is utilized in fabrication process applicable to a wide range of metals, resulting in parts of controlled porosity, close dimensional tolerances, good finish and workability, and other desirable properties

● By Benjamin Melnitsky

A few years ago Charles F. Kettering of the General Motors Research Laboratory compiled a list of 25 mysteries of life and matter. Included among others were: What is friction? What makes glass transparent and metals opaque? What is fatigue of metals? What is mass and matter? What is electricity? Of course, the list of unsolved problems does not end with 25 or 250 or 2500. The number of questions that man can not answer is astonishing; however, what is even more amazing is man's ability to utilize phenomena which he does not understand. The radio makes use of electricity, the brake utilizes friction shot peening employs metal fatigue, and powder metallurgy enlists the unexplained force of cohesion.

For some strange reason, smooth metallic or non-metallic objects cohere without any discernible binding medium. Two pieces of optical glass flats will cling together

with a force of about 700 psi after being pressed one against the other. Everyone is familiar with the phenomenon of highly polished metal gage blocks sticking together with considerable tenacity. Precisely the same action occurs when powder metals are compacted. The minute particles of powder cohere on all sides to form an object of considerable tensile strength.

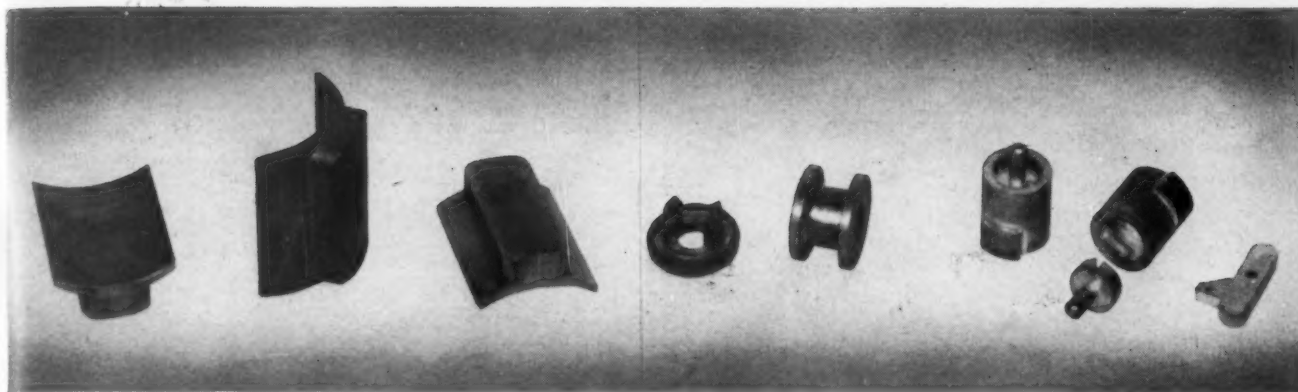
Many theories to explain this phenomenon have been advanced; however, as yet there is no one explanation that is perfectly satisfactory. The reason may be lacking but the results are known and utilized for the benefit of mankind through the relatively new science of powder metallurgy.

Powder metallurgy is new in the sense that only recently has it been exploited fully, and only in the past decade have the full potentialities of metal powders been realized. The process itself is more than a century old, dating back to 1829

when it was used for processing malleable platinum. Its first major industrial use was for the manufacture of tungsten wire for lamp filaments, a process which was patented in 1909. The next important development was in the 1920s, when metal powders were first used in the production of porous bearings. The full development of powder metallurgy as an important industry process did not take place till a few years before the war when metal powders began to be used for a wide variety of parts and fabrication processes. Since then, progress has not only been rapid but in many ways chaotic and confused.

The production of parts made from metal powders zoomed during World War II; however, in many instances this accelerated growth was based on factors of war urgency, rather than on sound economic factors. The need for war equipment was primary: cost





Photographs by courtesy of American Electro Metal Corporation (F. M. Demarest, photographer), General Metal Powder Company, Moraine Products Division of General Motors Corporation, and The New Jersey Zinc Company.

was secondary. Thus, powder metallurgy was used during the war in place of die casting, screw machining, sand casting, stamping, and other fabrication methods. With the resumption of competitive cost production many plants returned to conventional fabrication methods.

This partial shift away from powder metallurgy should not be construed as a condemnation of the method. Powder metallurgy can not compete in all instances with other fabrication methods. The high cost of metal powders, the specialized equipment necessary, the lack of personnel skilled in the techniques and science of powder metallurgy, the high cost of dies, and many other factors often make the use of this technique unfeasible and unwise. Yet powder metallurgy can compete successfully with all other fabrication methods in certain areas of industrial production and is doing so. It is in these areas that the technique of powder metal production serves as an invaluable tool of industry.

The inherent factors for each fabrication method limit the usefulness of the method. No machine can do all jobs and no technique can solve all industrial problems. With this view in mind, the usefulness of powder metallurgy can

be approached sensibly and realistically. Some of the many applications for this metal-working process are indicated in the paragraphs that follow.

#### Controlled Porosity

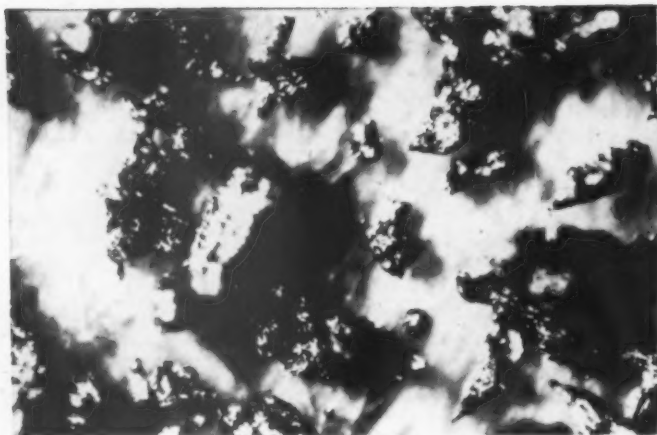
By careful selection of powders and by controlling production processes, the degree of porosity can be predetermined. Using a coarse powder produces a part that is more porous than one made from exceedingly fine powder. Porosity is also controlled by adding certain salts to the metal powder, during the sintering (baking) process, the salts volatilize leaving pores in their stead. This feature of controlled porosity is a unique attribute of powder metallurgy which is utilized in making oil-less bearings, bushings, and other parts. The porous metal parts are oil-impregnated by a vacuum process or by immersion in a bath of heated lubricants. The interconnected pores of the powder metal part provide a homogeneous capillary structure in which large amounts of oil can be stored. The oil is filtered and metered to the surface of the part according to surface demands.

Controlled porosity makes powder metallurgy perfectly suited to the production of metal filters wherein the degree of filtration is regulated by controlling the porosity of the metal part. For example, the Moraine Products Division of Gen-

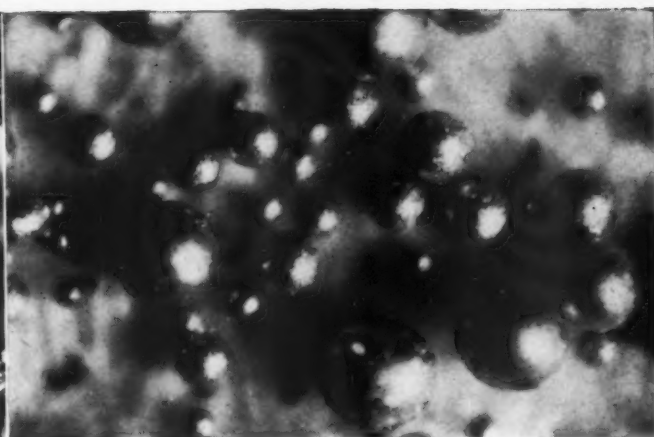
der metallurgy which is utilized in making oil-less bearings, bushings, and other parts. The porous metal parts are oil-impregnated by a vacuum process or by immersion in a bath of heated lubricants. The interconnected pores of the powder metal part provide a homogeneous capillary structure in which large amounts of oil can be stored. The oil is filtered and metered to the surface of the part according to surface demands.

The two presses at right produce the "compacts" or formed parts from metal powders; the two at left are used for coining compacts after the sintering operation.





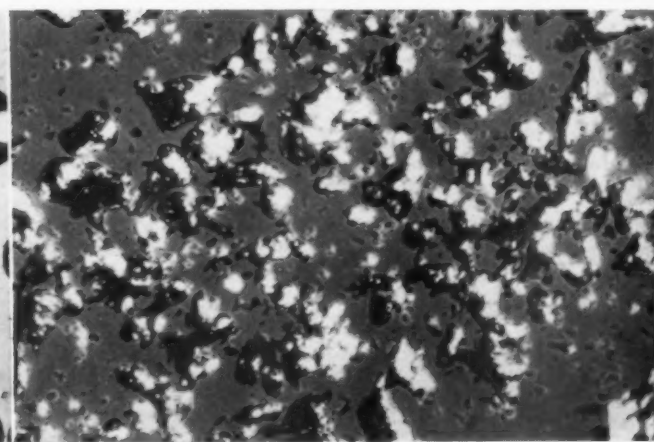
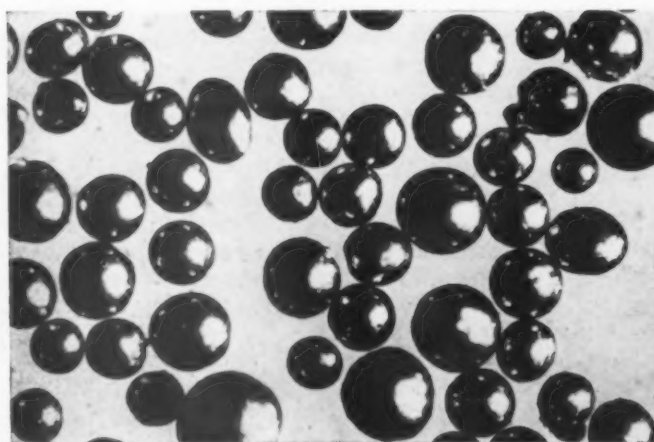
Brass Metal Powder, 70% Copper, 30% Zinc.



Brass Metal Powder, Spherical, with addition of 0.3% Phosphorous.

Copper Metal Powder.

Zinc Metal Powder.



*All photographs in this group magnified 100 times.*

eral Motors produces four grades of porous metals, the coarsest grade filters particle sizes 0.002" to 0.005", the finest grade filters particles from 0.0001" to 0.0005".

The ability of powder metal parts to be oil-impregnated is useful in preventing corrosion to parts which operate in an atmosphere of excessive moisture. Metal parts with controlled porosity are fabricated as breathers, separators, metering devices, and flame arrestors.

#### **Wide Range of Metals**

A partial list of metals available as powders include: aluminum, antimony, beryllium, cadmium, chromium, columbium, copper, gold, graphite, iridium, iron, lead, magnesium, manganese, osmium, molybdenum, platinum, silicon, silver, tantalum, thorium, titanium, tin, tungsten, zinc, zirconium, and still others. No other fabrication process permits utilization of such a wide range of metal types and metal

combinations. Alloys of metals with widely separated melting points, as well as metals which do not mix as liquids, can be combined only as powders. In addition, many metals which are difficult to melt under ordinary conditions can be handled with ease by the powder metallurgy process. These metals include tantalum, molybdenum, platinum, columbium, and tungsten. The chemical composition of powder metal parts can be controlled to a much greater degree than when metals are melted. The ingredients of the finished part are combined with the ease and accuracy of a housewife mixing cake batter.

#### **Cutting Tools**

Not only can different combinations of metals be made, but metals and non-metals can be combined easily. Impregnated diamond grinding wheels, carbon graphite brushes, welding rods, are but a few such materials whose production is pos-

sible only through the development and application of powder metallurgy.

Manufacture of metal parts to cut other metals has always been a difficult problem. Powder metallurgy has contributed greatly to the science of metal cutting. Tungsten-carbide tools are a case in point. This extremely hard material could not be fabricated by ordinary methods; however, by combining tungsten carbide powders with small amounts of cobalt and by special handling processes, this material, which is second in hardness only to diamonds, can be formed to desired shapes for cutting tools, dies, and other uses. The development of tungsten-carbide cutting tools has been one of the most significant developments in the machine tool industry. Tools made from this material can stand up to the same speeds as high speed tool steel but will last from 50 to 100 times as long between sharpening. Tungsten-carbide tools can cut

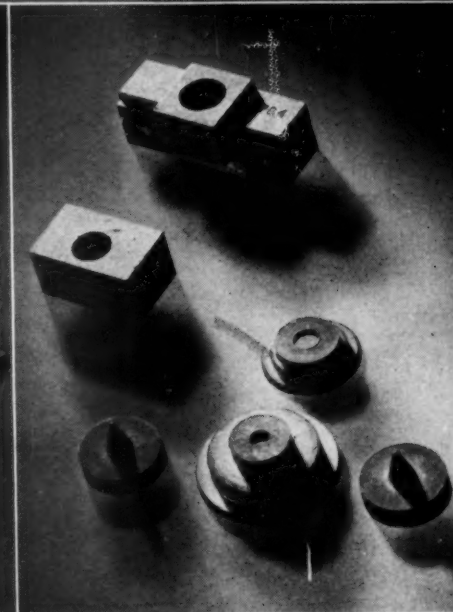


**Wafer-thin powdered metallic clutch for aircraft use.**

porcelain, glass, and the toughest steels which ordinary tools can not touch.

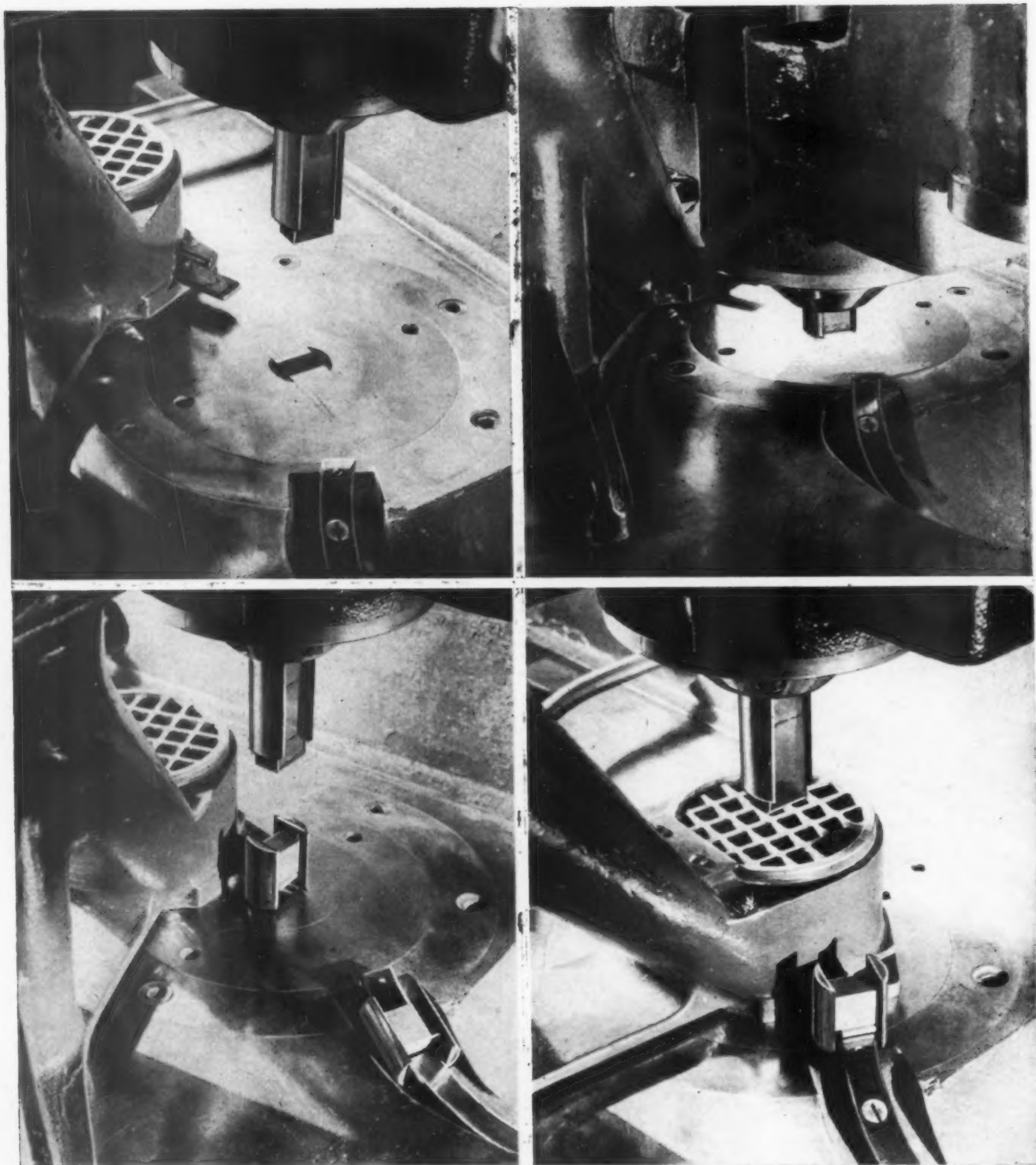
#### ***Friction Materials***

One of the most valuable applications for powder metals is in the field of friction materials for clutches, brakes, and other parts. Wafer-thin clutches for aircraft use were a major factor in the development of modern aircraft. The same process which produces minute clutches  $1\frac{3}{8}$ " O.D. x  $\frac{7}{8}$ " I. D. x 0.015" thick for use in airplanes also makes clutches 46" in diameter for use in big presses and earth-moving equipment. Powder metals are especially valuable for such applications because they conduct heat rapidly away from the friction surface and operate under all temperatures. Metal powder clutches for aircraft starters, landing gear, bomb bay doors, gun turrets, flap actuators, and other plane components functioned to within very close



**Parts made from copper, brass, bronze, and nickel powders.**





**Four steps in forming part from powder metal: Metal powder has been automatically fed into die cell; Upper punch forced into die cell compacts the powder; Lower punch ejects the compacted part; The part is moved off the machine on the slide at lower right, and a new charge of metal powder is fed into the die cell.**

tolerances at atmospheric temperatures from  $-65^{\circ}$  to  $200^{\circ}$  F.

#### **Control of Physical Properties**

Although metal in the form of powder has less ultimate strength than other metal forms, this factor is compensated for by the fact that

physical properties of powder metal parts can be controlled to a very precise degree. By regulating size and type of powders, die pressures, sintering temperatures, and other variables, very close tolerances of physical properties can be attained.

No other process permits laminating as many different metals into

one part. The resulting part has a uniformly bonded structure. As will be seen later in the description of the process of fabricating powder metals, the material is placed in a die and compressed into a compact. If desired, several layers of different metals can be poured into the die cell and the resulting compact will

be a perfect laminate of the different metals.

The porosity of powder metals mentioned earlier is a distinct advantage for some parts; it is a distinct disadvantage for many other parts. The porous structure naturally is weaker than a solid one. To overcome this, a method of infiltrating the porous structure with additional metal was perfected recently by the American Electro Metal Corporation. By this process copper is mixed with parts made from iron or steel powders so that all pores in the iron or steel are filled with copper. The copper is introduced into the steel or iron powder part as a liquid during the sintering operation. By a process of capillary action, the liquid copper is drawn into the part. Parts made by this process possess near absolute density and have tensile strengths as high as 185,000 psi. Because of the copper content, parts can be brazed without using flux or brazing material.

#### **Cemented Steels**

The cost of metal in powder form is higher than the same metal in any other form; however, this added cost is compensated for by the fact that there is little or no scrap produced and the cost of manpower used to fabricate the parts is unusually low. Tolerances as high as plus or minus 0.0005" can be attained. The resulting finish is smooth and usually requires no further machining.

Because of the high equipment cost, powder metallurgy is practicable only where production is on a relatively large scale. In addition, the process of fabricating parts from metal powders places definite restrictions on the size, shape, and

dimensions of the part. Ordinary presses for molding powder metal compact can not handle parts weighing more than a pound or two. Because parts must be sintered after compacting, there are definite limits placed on the thinness of parts. Walls that are 0.032" or less in thickness will be distorted during this heat treating process. Since the process is one of compressing powders between dies, all the shortcomings inherent in the method are transmitted to the parts produced. Threaded surfaces, side holes, curved surfaces, recesses, offsets, etc., are often difficult or impossible to produce.

#### **Making Metal Powders**

There are many different processes used in making metal powders. Some of the production techniques are described briefly, as follows:

(1) *Electrolytic Process.* The techniques used for electroplating are used here, the basic difference being that the metal leaves solution in powder form.

(2) *Shotting.* Molten metal is dropped from a distance through fine screens and is broken up into fine particles.

(3) *Granulation.* Molten metal is stirred and as it freezes it crystallizes; crystals are then granulated.

(4) *Atomizing.* Molten metal is dropped in front of a stream of air or steam which causes the metal to freeze in powder form.

(5) *Carbonyls.* Iron ores react with carbon monoxide to form a liquid which, when heated, decomposes into iron powder and carbon monoxide gas.

(7) *Precipitation.* This is chemical process where one metal replaces another in solution. Thus, alumi-

num added to copper sulphate replaces the copper which precipitates as a fine powder.

(8) Other chemical and mechanical processes are used.

The powders thereby produced are used either in their pure state or several are combined to form a mixture, depending on the type of part to be produced and other variable factors. The mixed and blended powders are made ready for fabrication. The powder is fed into the hopper in back of the press. In the press, the powder is automatically fed into the die cell and is then compressed to about one-third its volume between two punches. After pressing, the lower punch elevates the compact and ejects it from the die cell. The compact is moved to a slide, where it is carried out of the machine. A new charge of powder is fed into the die cell, and the process continues.

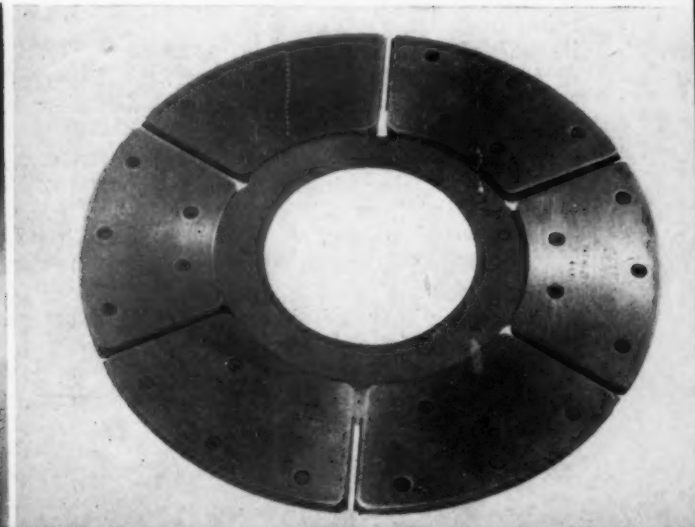
The compact at this point is relatively fragile and can be damaged by rough handling. The compacts are carried into a sintering furnace where they are subjected to heats below the melting point of the most fusible constituent. Some metals grow during sintering whereas others shrink. The rate of dimensional change is usually uniform and can be anticipated in designing the dies for parts. The furnace illustrated in the accompanying photograph is the continuous pusher type which carries parts through at a predetermined speed.

Sintering, is often the final operation for parts; however, where it is necessary a coining machine is used to bring the sintered part down to closer dimensional tolerances, increase the strength of the part, or impart a smoother surface finish.

Several of these parts have been deformed to demonstrate the ability of powder parts to withstand bending without fracturing.



Powdered metal clutch disk, 14" in diameter, used in motor bus.



# EVALUATING THE EFFICIENCY OF THE PURCHASING DEPARTMENT

● By John F. Putnam

Outline of a method of reporting to management the tangible and intangible accomplishments of the buying operation

THE competent and forward-looking director of purchases is fully aware of the vital role played by the purchasing department in the successful operation of any firm. He realizes that improved purchasing methods result in the strengthening of the position of his firm in competition. He understands that before he can improve the efficiency of his department it is necessary that management recognize all that is implied in the purchase function. It must be shown that the purchasing department occupies a strategic position where it can realize numerous economies for the firm and make suggestions which may lead to improved methods of operation. Management should have confidence in the ability of the purchasing department and be receptive to recommended improvements in policy and procedure.

Management is often composed of men trained in the sales and production divisions. How can such a group be shown the benefits of sound purchasing methods as well as unnecessary losses and unrealized gains resulting from an overbridling of the purchaser? A report from the director of purchases to management regarding the purchasing function—an analysis that is complete, concise, clear, and readable—can solve this problem.

Management is prone to think in terms of dollar quotas and percentile efficiency. It likes analyses to deal with concrete facts and figures. However, a *precise* evaluation of the overall efficiency of the purchasing function cannot be determined. Too many intangible factors are involved. Instead, a report can be presented which will contain an analytical evaluation, qualified by recommendations and suggestions for the handling of intangibles, which can be of far greater value to management than a purely mathematical determination of efficiency.

Mr. Putnam's paper won the first prize award of twenty-five dollars in a contest sponsored by the Milwaukee Purchasing Agents Association. The contest was open to students completing the two-semester course in Industrial Purchasing at Marquette University.

A report discussing the efficiency of a purchasing department should be based upon concrete facts and figures. These should be compared to similar records of previous periods and interpreted in the light of intangible factors affecting the function. The resultant conclusions should be discussed with reference to current policies and procedures to point out both strength and weakness in the same. Then the director of purchases should offer recommendations regarding improvements in the purchasing system, supporting his suggestions with data and discussion. In this manner the purchasing agent can be instrumental in affecting marked improvement in the efficiency of the purchasing function. The following is an outline of the type of report suggested above:

## 1. Calculable Aspects of the Purchasing Function

Many phases of the purchasing function can be evaluated from simple accounting methods. These items can be grouped under the heading *Net Purchasing Expenditure*. Included in this category are such items as:

(a) Total purchases of raw material. This may be sub-divided into categories denoting purchases by commodity or by use.

(b) Total purchasing administrative expense. This includes such

items as office supplies and expenditures, salaries, and traveling expense.

(c) Total expenditure for receiving, inspection, and storage of raw materials. Among expenditures included here are handling expense, depreciation, spoilage, obsolescence, and theft.

(d) Avoidable losses attributable to the purchasing department. These are due to human mechanical errors and errors in judgment. The latter may take the form of an overly rigid hand-to-mouth policy, ineffective inventory control, or faulty organization. It may result in awarding a contract to an unreliable supplier with subsequent late delivery, non-delivery, sub-standard quality, and the like.

(e) Losses beyond the control of the purchasing department. Losses such as faulty specifications set up by the using department and losses due to uneconomical rush orders should be included here. Where the purchaser would be able to avoid a loss were he not blocked by policy, the loss should be shown. Attention should be drawn to this type of loss in a written discussion.

(f) Loss due to forward buying. Key materials should be put into production at the market price prevailing when used. If this is below the purchase price, the difference should be placed in this account.

(g) Gross purchasing expense.



This is the summation of (a), (b), (c), (d), (e), and (f).

Sections (h) to (k) account for savings and income from purchasing activity:

(h) Cash discounts earned.

(i) Disposition of scrap and waste. This amounts to the scrap sale price less the cost of renovation. If the purchasing department acts as a broker for another department, the brokerage fees received appear in this account.

(j) Gain due to forward buying. See (f).

(k) Savings through factors other than price. This account can be used where savings from certain activities can be shown in tangible terms to reduce costs. Such activities, many of which are suggested by Stuart F. Heinritz in his booklet "Basic Principles of Purchasing," include results of suggested substitution of more economical materials, modification of specifications by the use of an alternative design, combination of specifications, development of new sources of supply, reduction in handling, packing or transportation costs, standardization with subsequent reduction in inventory, changing from spot to contract purchasing or vice versa, and purchasing by bid rather than by market quotation.

(l) Savings and income from purchasing activity. Factors (h), (i), (j), and (k) are here totaled.

(m) Net purchasing expenditure. This is the value of (g) less (l).

To give significance to the above figures, they must be related to similar figures from comparable periods. This is most easily done by relating figures to a base figure, thus obtaining an index number which may be easily compared with another similarly derived from data of other periods. Howard T. Lewis in his book "Industrial Purchasing" suggests the use of *The Total Cost of Materials Purchased* as a base. This figure is directly related to most of the items above. Its use as a base eliminates a number of non-related factors.

The use of an index suggests, of course, an accumulation of data. Data is necessary to the scientific management of any concern and should be collected and used wherever possible. It is easily understood that the continued accumulation of data renders it ever more significant.

#### II. Intangible Factors

Under the heading *Intangible Factors* the director of purchases can explain the activities of the purchasing department with respect to

the numerous factors influencing decisions. Here he is able to supplement and illuminate the computational aspects of the report. Below are a few suggested headings for an organized consideration of these factors.

(a) Market analysis. Here are discussed such factors as price trends of principal raw materials, available sources of supply, business conditions, and outside labor considerations.

(b) Market operations. Factors fitting into this category include advance commitments, covering and hedging operations, and supplier relationships.

(c) Internal considerations. A few possible considerations to be included under this heading are internal manufacturing conditions, internal labor conditions, inventory position, capital available, budgetary considerations, experience in certain operations, and capital goods available.

(d) Evaluation of the personnel and routine of the purchasing department by an outsider. A qualified outsider is best able to judge without bias the characteristics of the purchasing force.

The above factors can well be used in the explanation of unusual  
(Please turn to page 314)

## SALESMEN NEED HELP

● By Don F. Wilber

**S**O you are a purchasing agent. You are the man who is annoyed by the salesman. You have to see from five to twenty-five of them a day. You have your work interrupted. You meet all kinds of individuals—some annoy you, some amuse you, some bore you, and some you are really glad to see.

Some fellows keep coming back time after time and you know, and they know, they do not have the product you are interested in. But their sales manager does not know.

Here is the fellow whose personality clashes with yours. You begin to bite your lip when you hear that he is outside. Remember that he may dislike having to call on you as much as you dislike talk-

ing with him, but it is his job.

Don't forget that all the advantages are in your favor. You are at home. You slept in your own bed last night. You had breakfast with your family. Last night you saw friends and relaxed. How about the fellow outside? He arrived in town about seven o'clock from Podunk, after driving 150 miles. He tried to find a hotel room—you know what that is. He had a lonely supper. And sat around missing his family. He slept in an uncomfortable bed. Tried to make a wrinkled suit look neat; sat and looked at a wall for a breakfast companion.

He then tries to come to you looking fresh, clean and full of good spirits. He tries to be of service.

He wants you to like him and his product. He may be tired and miserably lonesome to talk to someone. He may forget you have other duties, and stay too long. You become uneasy. He senses it and feels he was not welcome, so he leaves feeling more unhappy than ever, and has to do it all over again at the next stop.

A purchasing agent can help a salesman's morale immeasurably if he will only remember that the salesman makes a living by calling on purchasing agents and cannot pick his stops but must go where his superiors dictate.

His whole ambition is to become a friend of you and your company. Help him by being friendly.

## AUGUSTA, GEORGIA



Quantity Required		IMPORTANT	Form No.		Quantity on Hand	Will Last
		(See Instructions at Bottom of Page) (Fill out all Columns)				
		Description of Articles Wanted				

**GEORGIA & FLORIDA RAILROAD**  
W. V. Griffin and H. W. Purvis, Receivers

**REQUISITION FOR SUPPLIES**

No. \_\_\_\_\_

Form PA 300

PLEASE FURNISH THE FOLLOWING: \_\_\_\_\_ 194 \_\_\_\_\_

**GEORGIA & FLORIDA RAILROAD**  
W. V. Griffin and H. W. Purvis, Receivers

**REQUISITION FOR STAMPS**

To: \_\_\_\_\_

Reqs. No. \_\_\_\_\_

194 \_\_\_\_\_

Please furnish following postage stamps for conducting business of this Agency for month of \_\_\_\_\_ 194 \_\_\_\_\_

_____ 3c stamps	For solicitation purposes:	_____ Mailing reports to Traffic Representatives.	
_____ 2c stamps	APPROVED:	_____ Mailing Routing Orders from patrons.	
_____ 1c stamps		_____ Genl. Correspondence relating to Traffic.	
		_____ Traf. Mgr.	
_____ 3c stamps	APPROVED:	_____ Mailing freight notices (not post cards).	
_____ 2c stamps		_____ General agency correspondence, including handling of claims with other lines.	
_____ 1c stamps		_____ Supt. Trans.	
Total:		Received last month:	
_____ 3c stamps	_____ 3c	_____ Agent	
_____ 2c stamps	_____ 2c	_____ Station	
_____ 1c stamps	_____ 1c		

Ship \_\_\_\_\_

Care \_\_\_\_\_

At \_\_\_\_\_

Approved \_\_\_\_\_

**INSTRUCTIONS:**

Fill out and send in promptly on the first of each month to the head of your department. Do not make special requisitions except in emergency, and then give full explanation as to necessity. If current requisition shows an increase over previous month's requirements, explain in detail necessity for such increase. If stamps are not received within ten days after requisition is mailed, trace for advice of forwarding. Nothing should be included on this requisition but postage stamps.

**INSTRUCTIONS—**Requisition for STATIONERY must be made to cover a THIRTY DAYS supply, and must be mailed to Head of Department not later than the 20th OF EACH MONTH. DO NOT interline or write more than one item on each line. A copy of this requisition to be retained by maker against which to check receipt of supplies ordered. Use separate sheets for stationery; postage stamps; and other supplies. SEND TO HEAD OF YOUR DEPARTMENT; DO NOT MAIL DIRECT TO PURCHASING AGENT.

The requisition form provides for a grouping of requirements, with space for 19 items on each sheet. It requires the approval of a department head before being transmitted to the purchasing department. A duplicate copy is retained by the maker, to check the receipt of goods ordered. In requisitioning supplies, it is necessary to show quantity on hand and the estimated period of coverage.

Stationery items are requisitioned on the same form, but on a separate sheet. These items are identified by form number, and are requisitioned monthly for a thirty days supply, permitting the orderly scheduling of purchases and issues.

A special form is used for the requisitioning of postage stamps for the various agencies. This is also done on a monthly basis. Centralized purchasing for postage items is an effective means of control.

[illegible]

The record of purchases is carried in a 4 x 6 card file. It follows the conventional form for such records, with the item identified in the heading for file purposes, and columnar ruling to show the pertinent details of all purchase transactions. Both sides of the card are used, providing space for 26 entries.





# WHEN PURCHASER SUES SELLER

The chances of getting a favorable verdict depend on observance of the legal principles embodied in the negotiation and the contract

●  
**By Leo T. Parker**

A review of recent higher court decisions discloses some rather startling facts, among which is: A majority of purchasers who sued sellers during 1946 lost their suits.

In this article we shall review outstanding late and leading higher court law suits involving various phases of controversies in which purchasers sued sellers. The purpose of doing so is impartation of valuable legal data which will assist readers to prepare to win unavoidable suits.

## **Implied Warranty**

According to a recent higher court the *intentional non-disclosure* of a latent defect by the seller is fraudulent, even though there is no warranty or he has refused to give one. This rule of law is especially applicable where the seller knows that the buyer intends to use the articles or goods for some special purpose. In other words, the law is well settled that when there exist in merchandise latent defects not discoverable on a reasonable examination, the seller, if he has knowledge thereof, is bound to disclose such latent defects to the buyer, and his failure to do so may be made the basis of a charge of fraud.

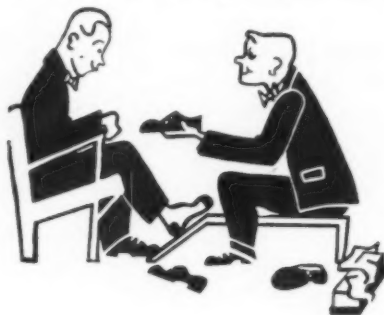
It is well known that a seller who breaches a valid contract of sale, or practices fraud, is liable for *full* damages sustained by the purchaser.

For illustration, in *Knight Company v. May Shoe Corporation*, 18 N. W. (2d) 359, reported June, 1945, it was shown that a seller entered into a written contract with a shoe company to sell the latter fifty thousand square feet of leather to be used in making soles for shoes. The leather was described as "chrome retan bends",

and the contract required delivery of leather designated as "TR" which was intended by the parties as an abbreviation of the term, "tannery run".

The leather delivered to the shoe company was made into shoes in the regular course of its business, and the shoes were sold to its customers throughout the country. A few months later numerous customers returned shoes with cracked soles.

The shoe company sued the seller and proved that it had paid the price prevailing for "sound quality" leather. Also, this purchaser proved that the leather delivered by the seller was "reworked" leather. In other words, the seller delivered brittle and hard leather which had been spoiled during the tanning



process. The defect was caused by too much gelatine being taken out of the hide by chemicals used in the tanning process. After such leather is put through the waterproofing process it becomes firm and stiff and it is impossible to determine the cracky condition by flexing or bending the leather. The defective quality of the leather is concealed and it is impossible to distinguish the reworked leather from the sound quality merchandise.

In view of this testimony the lower court held the seller liable to the shoe company for \$12,567 damages. This amount was: (a) Freight—\$1,594; (b) cost of reselling shoes returned by the shoe company's customers — \$1,106; and (c) cost of the manufacture of shoes with defective soles, less the amount recovered by the shoe company on its resale of the shoes — \$7,500. The higher court approved the verdict, saying:

"We are of the opinion that the charge of fraud is adequately sus-

tained by the evidence . . . . One who fails to disclose to another a thing which he knows may justifiably induce the other to act or refrain from acting in a business transaction is subject to the same liability to the other as though he had represented the nonexistence of the matter . . . ."

Also, see *Dowling v. Lawrence*, 58 Wis. 282, 285, 16 N. W. 552, 553, where the court quoted:

"Whenever one person misrepresents or conceals a material fact—that is, a fact which is substantially the consideration for the contract, and which is peculiarly within his own knowledge—such transaction will be void on the ground of fraud."

## **What Is Duress?**

It is well established law that all contracts and agreements made under duress are void. Moreover, the seller who practiced duress is liable for full damages caused the purchaser.

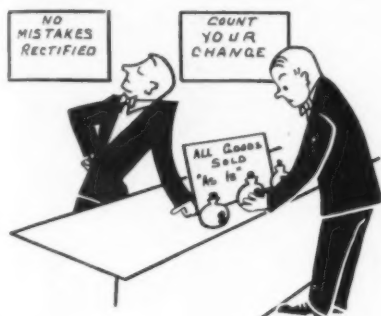
Generally speaking, moral duress is any imposition, oppression, under influence, or the taking of undue advantage of the business or financial stress or extreme necessities or weakness of another. The theory under which relief is granted by the court is that the party profiting has received money which in good conscience he ought not to be permitted to retain. However, the mere fact that a seller accepts a payment is *not* sufficient testimony to establish "duress".

For illustration, in *Norton v. Michigan State Highway Department*, 24 N. W. (2d) 132, reported November, 1946, it was shown that a seller submitted a claim for \$27,000 which was paid to him. Then, later he filed suit for \$30,900, alleging in his petition as a basis for this latter claim that, although he often requested further payment, the purchaser wholly refused to comply.

The seller testified that when he accepted the \$27,000 payment he did so because he "figured that to get \$27,000 was better than nothing". The seller claimed that he accepted \$27,000 under duress and compulsion under fear that he would get no payment if he refused this smaller amount. The higher court refused to hold that the

purchaser must pay the seller more money, and said:

"In executing the release plaintiff (seller) did so with full knowledge that the payment he then received was in full satisfaction of his claims arising out of the construction job here under consideration."



### Negative Warranty

According to a recent higher court a seller may legally "negative" a warranty. Thus, a purchaser is bound by a clause in a contract of sale which states that the seller gives no guarantee.

For example, in *Eastern Company v. Pyle*, 191 S. W. (2d) 708, a purchaser named Pyle sued Eastern Company seeking to recover the sum of \$7,800, as damages for breach of warranty in the sale of merchandise.

The evidence shows that Pyle entered into a written contract of sale with Eastern Company which contained a clause, as follows:

#### NOTICE

All sales subject to loss or damage by fire, shortage or failure of crops, and contingencies beyond control. Eastern Company gives no warranty, express or implied, as to description, purity, productivity, or any other matter. . .

The purchaser sued the seller for damages alleging that the merchandise was not fit for his intended purposes. Although the lower court held the seller liable, the higher court held the seller not liable. This court stated that where contract for sale of merchandise expressly states that the merchandise is not warranted as to description, purity, or productivity, a buyer can not recover for breach of warranty, even if he proved that merchandise was not of the true variety.

### Reasonable Clause Held Valid

Modern higher courts hold that any and all reasonable clauses in a contract of sale are valid which require the purchaser to perform certain acts to keep a guarantee live and effective.

For illustration, in *American Sanitary Company v. United States Hoffman Machinery Corporation*, 51 N. E. (2d) 809, it was shown that a contract of sale contained a clause which provided that the seller would not be liable for breach of his warranty unless notice of the breach was mailed by the purchaser by registered letter to the seller within five days after such breach.

The higher court upheld the validity of this clause and explained that a purchaser who violates a reasonable clause of this nature forfeits his rights under the seller's warranty.

### State Law

Many states have statutes which require a purchaser to give notice of a breach of warranty before a suit is filed. Failure to comply with the law will result in a verdict favorable to the seller.

For illustration, in *Tews v. Marg*, 16 N. W. (2d) 795, reported March, 1945, the testimony showed that a purchaser sued a dealer in feed. The purchaser alleged that the feed dealer knew at the time of the sale that the feed was to be used for feeding mink, and that he represented and warranted the feed to be fit for such purpose. The purchaser further alleged that the feed was not of the quality as warranted, but contained contaminated material and that as a result of its use the mink died.

Although the lower court held the purchaser entitled to a recovery, the higher court reversed the verdict, saying:

"Implied warranties are imposed by operation of law, and require notice of claim for damages arising from breach of warranty."

In other words, the purchaser failed to give the feed dealer notification of the intended suit, as required by a state law.

### Implied Warranty

Where the buyer of merchandise makes known to the seller the particular purpose for which the goods are required, and the buyer relies on the seller's skill or judgment there is an implied warranty that the goods shall be 'reasonably fit' for such purposes. This law is applicable to injuries sustained by the purchaser.

For example, in *Deffebach v. Lansburgh & Bro.*, 150 Fed. (2d) 591, reported July, 1945, it was shown that a woman purchased a robe for use as a lounging robe. About the third or fourth time she wore it she was badly burned. The

undisputed testimony was that she waved or "fanned" a match after lighting a cigarette, that the robe caught fire, and that the flame spread with great rapidity, "quicker than you snap your fingers almost," in spite of immediate and vigorous efforts of several persons to put it out. An expert, who had experimented with a sample of the same material testified that it had "a very low resistance to flaming and that only a fraction of a second was required for ignition purposes".



In holding the seller liable in damages to the woman, the court said:

"Since the buyer was not expert in textiles, we cannot agree that her examination of the robe ought to have revealed the fact that it would burn up in an instant if it came in contact with flame. We think she clearly relied on the seller's judgment that it was fit for use."

Also, see *Rogiers v. Gilchrist Company*, 45 N. E. (2d) 744. It was disclosed that a woman sued a manufacturer for breach of an implied warranty of fitness of a dress. The woman proved that when she wore the dress her skin "broke out in a rash" under her armpits. She had never before had any skin trouble. On May 31 she saw a physician. She continued to wear the dress from time to time and occasionally visited the physician until on September 5 he told her not to wear the dress.

The physician testified that the woman's condition was "a chemical dermatitis", and that in his opinion the dress caused it. A biological chemist testified that upon testing the dress he found that it had been improperly dyed in that the "dye intermediate", a toxic substance, had not been completely oxidized, and that such a dress would cause a toxic dermatitis wherever it came in contact with the skin.

In view of this testimony the higher court held the woman to recover \$500 damages. This court said:



"No further statement of the evidence is required to demonstrate that a jury could have found the existence and breach of an implied warranty of the fitness of the dress for the purpose of being worn."

On the other hand, see *Payne v. R. H. White Company*, 49 N. E. (2d) 425, reported July, 1943. The facts of this case are that a woman bought and wore a dress and she suffered from burning, itching, blisters and swelling. She sued to recover damages, but the higher court refused to allow her any damages, and said:

"The plaintiff (woman) must show that the dress was unfit to be worn by a normal person, and cannot recover by merely showing that it was unfit for her or for some unusually susceptible person to wear."

#### Misbranded Chemical

Ordinarily the manufacturer of a dangerous drug who labels it as harmless, is liable in damages for injuries to the ultimate consumer. However, a mere retail dealer who sells such a dangerous and mislabeled drug in its original package is not liable without proof of some real negligence on his part. But a retail dealer who holds himself out to his customer as being the manufacturer takes on a liability like that of the manufacturer.

For example, in *Commissioners v. City Corporation*, 48 N. E. (2d) 263, it was shown that a dealer ordered pyruvic acid from the City Chemical Corporation, which had purchased the chemical from another company. However, before sending on the bottles to the dealer, the chemical company removed the labels from the bottles and pasted on each bottle a label containing its own name.



Later the bottles exploded, and suit was filed for damages against the City Chemical Corporation. The latter contended that it could not be liable because it had not manufactured the chemical. It is interesting to observe that the higher court said:

"The words on the bottle labels amounted to a representation that the Chemical Corporation was the maker of the substance in the bottle and that the substance was chemically pure pyruvic acid. . . . One who puts out as his own product a product manufactured by another is subject to the same liability as though he were its manufacturer."

Also, see *Willson v. Faxon, Williams & Faxon*, page 113 of 208 N. Y. In this case the higher court said:

"When the defendant represented to the plaintiff by means of the statement contained in the label on the box that Faxon, Williams & Faxon were the manufacturers of the preparation, it rendered itself just as liable to the purchaser as the actual manufacturers would have been if the purchase had been made from them."



Also, see *Baylor v. Ern Seed Company*, 191 S. W. (2d) 689. In this case a planter sued a seed company to recover damages alleged to have arisen as a result of the failure of the seller to deliver Babosa onion seed to him, as it had contracted to do. The planter planted and properly cultivated 20 acres of onions. The seed planted were represented by the seller to be of the Babosa variety, but when fully grown were "Blue Whistlers". He alleged that if the seed had been of the Babosa variety, as represented, the crop of onions would have been worth \$150 per acre, or \$3,000 for the 20 acres, but that the "Blue Whistlers" were worthless.

The testimony showed that the planter purchased the seed from a retail company whose company ordered the onion seed from the wholesale seed company over the telephone, and the seed was billed to the retailer.

The higher court held the wholesale seed company not liable, saying that under no circumstances could the wholesale company be liable because the planter had purchased

the seed *directly from the retail dealer*.

Modern higher courts always endeavor to interpret the *reasonable intended meaning* of contracting parties when deciding a litigation involving a verbal sale contract. This law is particularly applicable to contracts made over the telephone.



For instance, in *Scott v. Troop Water Heater Company*, 28 Atl. (2d) 922, it was disclosed that a company advertised 100 water heaters "at a tremendous sacrifice". They were offered, subject to prior sale, at \$10.00.

A purchaser, named Will, telephoned the seller to ship the 100 heaters, and to send one right away so that it could be tested. This heater was shipped to Will and billed to him at \$15.00, plus freight, and he paid the bill. When the heater arrived Will discovered that it was "used". He sued the seller for \$2,868 contending that he was damaged this much because the seller had failed to deliver *new* heaters as he had promised over the telephone. In refusing to hold the seller liable, the higher court said that it would be somewhat remarkable that a seller would negotiate to sell new heaters at \$10 each when new ones cost more than \$30 each. The court said:

"... All the circumstances in connection with the transaction indicate that a contract, such as plaintiff (Will) sets up, was not entered into, that the minds of the parties did not meet on the subject which he avers, namely a contract for the sale and purchase of new heaters. It clearly evinces that Duerr (seller) had not so understood the telephone conversation."

#### Testimony Favors Purchaser

Very frequently, common sense is a good basis for a court's verdict.

For instance, in *Currie v. Smith*, 191 S. W. (2d) 704, reported January, 1946, a suit was instituted by a purchaser named Smith against the Currie Seed Company to recover the sum of \$1,135.35, being the





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On the job, the savings in pounds mean a savings in dollars. Gasoline economy is improved. Maintenance costs are reduced. Life factor is increased.

If you make a product that moves, it will move more efficiently and economically through the application of N-A-X HIGH-TENSILE. Good formability, excellent weldability and fine surface texture for finishing make N-A-X HIGH-TENSILE a great steel to work with, too.

MAKE A TON OF SHEET STEEL  
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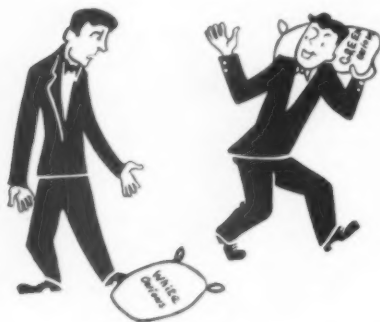
## GREAT LAKES STEEL CORPORATION

N-A-X ALLOY DIVISION • DETROIT 18, MICHIGAN  
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alleged purchase price of 841 bags of onions, at \$1.35 per bag.

The evidence showed that Smith had two plantings of onions, the first of white onions and the second of whites and greens. The first planting matured first and was sold to Currie Seed Company. They were harvested and paid for, and there is no trouble as to this planting. The second planting matured later and Smith wanted to sell them to Currie. Currie came and looked at the onions, and Smith told him that he wanted \$1.25 per bushel for the greens and \$1.35 for the whites. Smith testified that Currie said, "I will take them." Readers must keep in mind that Smith testified that this statement was made by Currie, but *no one else* heard this statement.

There was some delay in harvesting the onions, but ultimately the green onions were harvested and paid for by Currie, but the whites were left in the field. Thus in effect, Currie impliedly admitted *some* agreement with Smith with respect to the second planting of onions. Later Currie took eight hundred and forty-one bags of onions. Smith sued Currie to recover \$1,135.35



for these onions. Currie defended the suit on the grounds that he had not made a valid contract to purchase these onions at \$1.35 a sack.

During the trial the court's attention was directed to these facts: Currie accepted and paid for the first plantings of onions; he accepted and paid for the green onions of the second planting; after Currie received the letter by Smith's lawyer, Currie had 841 bags of white onions plowed up, but did not pay for them. In view of these facts, the higher court held Smith entitled to a full recovery from Currie, and said:

"The evidence is sufficient to support the finding of the trial judge that Currie did make a contract to take the onions at \$1.35 per bag."

Under all circumstances where it appears doubtful whether there is a "warranty", the question should be left to the jury.

For instance, in *Nielson v. Hermansen*, 166 Pac. (2d) 536, a purchaser testified that he went to a seller's place of business, and stated that he wanted some "Federation" merchandise; that the seller stated that he had some Federation, but failed to deliver this kind of merchandise.



The purchaser sued the seller for heavy damages, and asked for a jury trial. The lower court refused to allow the jury to decide the controversy and rendered a verdict for the seller. The purchaser appealed to the higher court which reversed the verdict, saying:

"This question should have been submitted to the jury. . . ."

#### Defective Installation

According to a late higher court decision, a seller is liable for all losses resulting from his employee's negligent installation of equipment and devices sold to home owners.

For illustration, in *Russell v. Union Hardware Company*, 191 S. W. (2d) 278, reported March, 1946, it was shown that a property owner sued the Union Company to recover damages for the destruction by fire of his dwelling. The property owner proved that he had purchased an electric range from the company which had its employee install the range, together with the necessary wiring and electrical connections. The house caught fire and burned down. The property owner proved that the company's employee cut the wire's insulation, exposing the wire, and then used uninsulated, sharp-edged staples in securing the wiring to the parts of the interior of the dwelling.

The counsel for the company argued that it could not be liable because the rewiring and installation of the range was inspected by an inspector from the State's Inspection Bureau, referred to as the Fire Prevention Bureau. Notwithstanding this contention, the jury held

the company liable for *full* value of the dwelling and its contents. The higher court approved the verdict, and said:

"The fact that defendant (company) sold plaintiffs the range which had to be connected with electric current were circumstances to be taken into consideration by the jury."

#### New Trial Necessary

Considerable discussion has arisen from time to time over the legal question: If a jury awards a verdict allowing damages to a purchaser, can the jury correct the jury's verdict when based on erroneous testimony?

For instance, in *Burchfield v. Tanner*, 178 S. W. (2d) 681, a lower court held a seller liable in \$3,014.67 by way of special damages for the sale of merchandise.

When the verdict was returned by the jury it was read in open court and each juror was asked to stand up and answer whether or not that was his verdict. After each juror had answered that it was his verdict, the court ordered that the same be filed by the clerk and the jury was



discharged. Three days later the purchaser admitted that the jury had based its decision on erroneous testimony. Then the court settled the case by awarding a *lower* damage allowance than was awarded by the jury, and explained that it merely was correcting an error on which the jury had based its verdict. The higher court promptly reversed the verdict saying:

"Where the error has been committed by the jury for a larger or smaller sum than they intended, . . . when the verdict has been affirmed in open court, and the jury have separated, the only remedy for a mistake is by setting the verdict aside and granting a new trial."

Therefore, although both litigants agreed to reduce this damage award, it was held illegal.

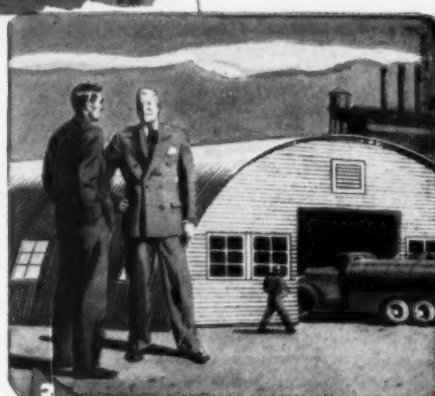
"I JUST GAVE MY PURCHASING AGENT  
A RAISE!"



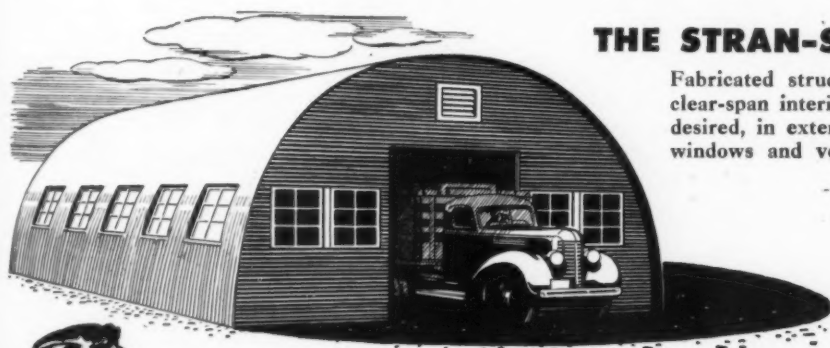
1. "With building conditions the way they are, I was tearing my hair out trying to find a way to get the extra space we needed so badly."



2. "Then my purchasing agent really came through. He showed me how the Quonset 40 would give us exactly what we needed—in a hurry and at low cost."

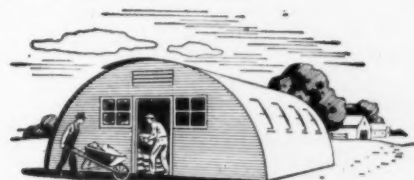


3. "So here's our new Quonset 40. Fire-resistant, durable and economical, it's got everything we want. And that's why the p. a. got a raise!"



## THE STRAN-STEEL QUONSET\* 40

Fabricated structural Stran-Steel construction with clear-span interior. Width is 40 feet, with length as desired, in extensions of 20 feet. Sliding door, four windows and ventilator in each end are standard.



### THE QUONSET 20

The width is 20 feet, with about any length you say. Like all Stran-Steel Quonsets, it is rot-proof and laughs at termites.



### THE QUONSET 24

Supplied with open front, solid front panels or sliding doors. Width, 24 feet, with length to suit, in 12-foot extensions.



P-S-S-T, FELLAS!

Why not try recommending Quonsets to your boss? There are three basic Quonsets, you know—the "40," the "20" and the "24." One of them's sure to fill the bill, whether you need an administrative office, a garage, a warehouse, or anything in between. To get all the facts, just see your local Quonset dealer.

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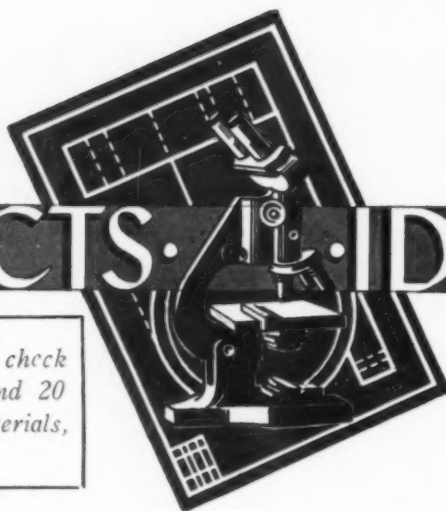
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# New PRODUCTS • IDEAS

Purchasing Agents and their Assistants are invited to check the pre-paid "Ask Purch" postcards on Pages 19 and 20 for late catalogs and bulletins on New Products, Materials, Finishes, Equipment, etc.



## TILT TRUCK ATTACHMENT



NEW Universal tilt truck attachment is said to take the load strain off the operator and double the capacity of any hand truck. Free steering, the attachment can be fitted to new or old two wheeled hand trucks. It comes in two sizes, can be adjusted to any desired load balance and in full lowered position makes a three-wheel platform of the truck. *Melooz Manufacturing Co., 1311 West Washington Blvd., Los Angeles, Calif.*

## ALUMINUM LADDER FOR LIGHT USE IN INDUSTRY

MODEL DLL aluminum ladder, designed for light industrial use, weighs slightly over 1 lb. per ft. and is safe for a 250 lb. load it is claimed. It will not rot or rust, and can be washed or scalded without impairing its strength. Rungs are corrugated for safe footing. Sizes range from 6 ft. to 16 ft. lengths, and two of the 8, 10 and 12 ft. length ladders can be joined to form an extension ladder. *Aluminum Ladder Co., 268 Carbis St., Worthington, Pa.*

## NEW TYPE PALLETS

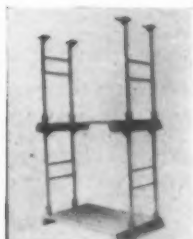


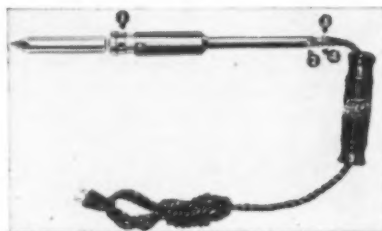
ILLUSTRATION shows two Multi-Stak pallets, one upon the other. Each pallet holds 4000 lbs. dead weight, and has four anchored supports (specification measurement) upon which succeeding pallets may be piled and held in place. The supports are collapsible for compact storage. The pallets allow unevenly piled materials to be stored or transported without risk of sliding, tilting or spilling. *Pallet Division, Industrial Washing Machine Corp., New Brunswick, N. J.*

## NEW LINE OF TUNGSTEN ELECTRODES ANNOUNCED

automatic welding. They are free from non-metallic inclusions, segregation, slivers, cracks, seams, and pipes. They are available in diameters ranging from .040 to 1/2", and in lengths from 3" to 24". Other lengths up to 60" can be furnished on request. Diameters are held to 0.001" tolerance, it is claimed. *Electric Welding Division, General Electric Co., Schenectady, N. Y.*

## TUNGSTEN electrodes for atomic - hydrogen and Inert-Arc welding are suitable for manual or

## ELECTRIC SOLDERING TOOL



PLUG tip electric soldering tool has replaceable tip and heating element. The entire tool can be taken apart by removing four screws. The heating element is encased in a metal sheath to protect the mica insulation and nickel-chrome heating element, and to transfer the developed heat to the soldering tip. Four sizes. *Vulcan Electric Co., Danvers, Mass.*

## FINNED TUBING OF SERRATED FIN TYPE

are formed out of tubing with serrated fins as high as 5/8" without crushing or distortion of the fins. Savings are claimed by the manufacturer in the fabrication of condensers, evaporators, unit heaters and coolers, coils for refrigerated vending machines and other types of extended surface equipment. Coils are available in ferrous or non-ferrous materials. *Fintube Coil Corp., 19 West Main St., Alhambra, Calif.*

## COILED finned tubing of the serrated fin type is available under the name "Finco". Flat or pancake coils

## KOROSEAL INDUSTRIAL APRON

LIGHTWEIGHT industrial apron, made of Koroseal film, is resistant to acids, greases, oils, caustics, gasoline, animal and vegetable fats, butter fats, blood, solvent and soaps and will not become stiff or tacky, it is claimed. It can be sterilized in a disinfecting solution. The apron is made two sizes, 29" by 35", with tape and hem, weight 3 oz.; and 35" by 45", with tape, hem and grommets, weight 5 oz. *B. F. Goodrich Co., Akron, O.*



## CARBOLLOY CEMENTED CARBIDE BALLS

SOLID Carbolloy cemented carbide balls for use in check valves and for sizing and burnishing, ground to tolerances of .0002" on the diameter, are available. The balls are standard only in Carbolloy Grade 44A. The 10 standard sizes of the balls run from 1/8" to 1" in diameter. *Carbolloy Co., Inc., Detroit, Mich.*

## CONVERTS CLAW HAMMER TO ADZ

ANY claw hammer can be converted into an adz or hatchet with an attachment called the Adzette. The Adzette consists of a steel head with a sharp 2 1/2" cutting edge, a smooth top surface and a V-shaped wedge on its underside. It is attached by inserting the wedge in the hammer claw and giving the hammer head a sharp blow. Held securely in place while in use, it may be removed by tapping with any blunt instrument, it is claimed. *Hercules Forge Corp., 1562 North Spring St., Los Angeles 12, Calif.*



(Please turn to page 148)

## We've Made It "Hard To Be Good"!



Naturally . . . it's got to be hard to be good! That's the reason Car-Na-Lac and Continental "18" keep floors clean up to 30% longer.

Built to wear longer, these superior, non-slippery floor treatments provide an extra hard, non-tacky finish that will not permit dirt and grime to be ground into the surface . . . instead the dirt "floats" on the surface until removed by sweeping. And you don't have to worry about tracking-off either. Car-Na-Lac and Continental "18" are specially processed to adhere to the floor . . . become "welded" to the floor and prevent tracking-off. Thus each application

lasts longer . . . reduces labor and maintenance costs.

Shrewd maintenance men everywhere are looking to Car-Na-Lac and Continental "18" for the outstanding performance they give in office buildings, hotels, hospitals, schools and other buildings. Best try Car-Na-Lac or Continental "18" yourself . . . they're both made "hard to be good"!

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Specialists in Heavy Duty Floor Treatments



**CAR-NA-LAC**  
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LACQUER-LIKE FLOOR FINISH

Both Car-Na-Lac and Continental "18" are approved by the Rubber Manufacturers Association for rubber floors.

**CONTINENTAL "18"**  
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THE SUPER FLOOR FINISH

Acts like a lacquer made of wax. Applied with the usual wax applicator. Levels out as it dries, resulting in a uniform, streakless, lacquer-like gloss. Self-polishing . . . dries in 15 to 20 minutes. Car-Na-Lac floor treatment has at least twice the wearing qualities of ordinary water waxes and is waterproof, non-slippery. Adapted for all floors except unsealed "raw" wood. Meets Proposed Federal Specifications for Item 9, Type I.

The same as Car-Na-Lac except that it contains about 38% more solids. Heavier solid content gives a higher gloss and reduces number of applications. Covering capacity averages the same as Car-Na-Lac, but one coat does the work of two. Recommended by a leading national casualty insurance company for safety. Meets U. S. Treasury Specifications for "Finish Material" (and Proposed Federal Specifications for Item 9, Type II).

(Continued from page 146)

## DRILLING AND TAPPING MACHINES

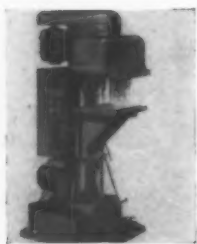


ILLUSTRATION shows Natco Model A-33A small multi-drilling and tapping machine. It provides hand and foot feed or combination hand and foot feed and air oil feed. A second model, A-33B, provides air feed. In each model the head is bored for 10 spindles with spindle speed available from 650 to 3550 rpm and sheave arrangement providing 10 speed variations. Model A-33B is preferably used for light precision tapping. The feed of the table travels  $2\frac{1}{2}$ " maximum amount as compared with a 4" maximum feed on Model A-33A. Bulletin 247 available. National Automatic Tool Co., Inc., Dept. 37, Richmond, Ind.

## PRESSURE GAUGE FOR CORROSION SERVICE

TYPE 105 Mastergauge pressure gauge will withstand the chemical action of a number of corrosive materials, according to the manufacturer. It features a lathe turned beryllium copper bourdon tube, with beryllium copper lock-tite cones screwed at the tip and socket. The tip and socket are of brass bar stock. It has a special bronzed bushed movement with bronze pinion and arbor. The gauge can be furnished in several case styles and dial sizes, standard equipped with a "Recalibrator" to correct it if knocked out of adjustment. Jas. P. Marsh Corp., 2073 Southport Ave., Chicago 14, Ill.

## NEW SURFACE GRINDER



MODEL GH-1 "Handraulic" surface grinder combines finger tip control of hand-operated grinder with automatic power feeds of hydraulically powered machines, it is claimed. A direct coupled hydraulic cylinder powers the table movement. The table is controlled by a self centering four way valve, operated by a 6" hand lever with ball handle. Table speeds from 5 to 50 ft. per minute are obtainable. New type combination trip dogs regulate the length of table travel. Working surface of the table is  $6\frac{1}{2}$ " x  $19\frac{3}{4}$ "; distance from table to bottom of standard 7" wheel is 12" maximum. The DoAll Co., Des Plaines, Ill.

## INDUSTRIAL STEAM HOSE OF SPUN GLASS YARN

NEW type steam hose employs spun glass yarn as a basic component to gain maximum heat resistance. The hose, designed for fighting refinery and oil well fires, is also for heavy-duty steam or hydraulic service in foundries, steel and paper mills, road constructions, dock and railroad use. It is capable of carrying 200 lbs. of saturated steam at 388 F. for more than 300 hours under continuous flexing, it is claimed. A special bonding technique is used to achieve adhesive strength between the hose's glass carcass, rubber tube and cover, according to the manufacturer. Goodyear Tire & Rubber Co., Akron, O.

## LADLE INDUSTRIAL TRUCK



POWER industrial trucks can now be used to pour molten metal from foundry ladles, by means of a ladle mounted on a base equipped with built-in sleeve pallets and a truck having a rotating head and fork. The driver controls all movements of the truck and also operates the ladle. The ladle is supported on trunnions in a frame of welded steel plate. It is 29" diameter unlined. Two sleeve pallets are welded into the base of the frame. A fork, bolted to the rotating head of the truck, engages the sleeves in the base of the ladle which is held in position for tilting and pouring. The Elwell-Parker Electric Co., Cleveland, O.

## NEW VARIABLE PITCH PULLEYS

and allow use with a V-groove companion sheave. The pulleys are adaptable to standard constant speed motors of  $\frac{1}{3}$  to 2 hp at 1750 rpm, giving variable speeds within a 3:1 ratio. The maximum key area incorporated in the new design results in longer equipment life and quieter operation, it is claimed. Motor bases and belts are supplied with the pulleys, which may be installed on new or old machinery or equipment. Gerbing Manufacturing Corp., 154 E. Erie St., Chicago 11, Ill.

NEW type steam hose employs spun glass yarn as a basic component to gain maximum heat resistance.

## CHROME SPRAY FLOATS

MADE for use in chromium plating tanks, these chrome spray floats are laid on the solution to a thickness of about one inch, forming a blanket which is said to cut escaping spray to minimum. They help to keep the heat inside the tank, thus conserving the supply of chromic acid, and are an auxiliary to ventilating systems, it is claimed. The floats are yellow polystyrene tubes,  $2\frac{3}{4}$ " long, completely enclosed. Approximately  $\frac{1}{2}$  lb. per square foot of solution surface area is required. They can be used indefinitely, and do not interfere with the work in the tank, according to the manufacturer. Hanson-Van Winkle-Munning Co., Matawan, N. J.



## ALUMINUM PROTECTIVE COATING MATERIAL

PROTECTIVE coating material, made with a corrosion-proof, synthetic resin vehicle and a special aluminum powder, can be applied like paint to metal, masonry and wood. It is claimed to give protection against acids, alkalis and water, to seal-in all average surface conditions and keep all moisture and other corrosive agents from reaching the surface. It is said to dry in a matter of minutes. The coating comes ready-mixed, never settles badly and can be resuspended by stirring even after six months of standing, according to the manufacturer. Prufcoat Laboratories, Inc., 63 Main St., Cambridge 42, Mass.

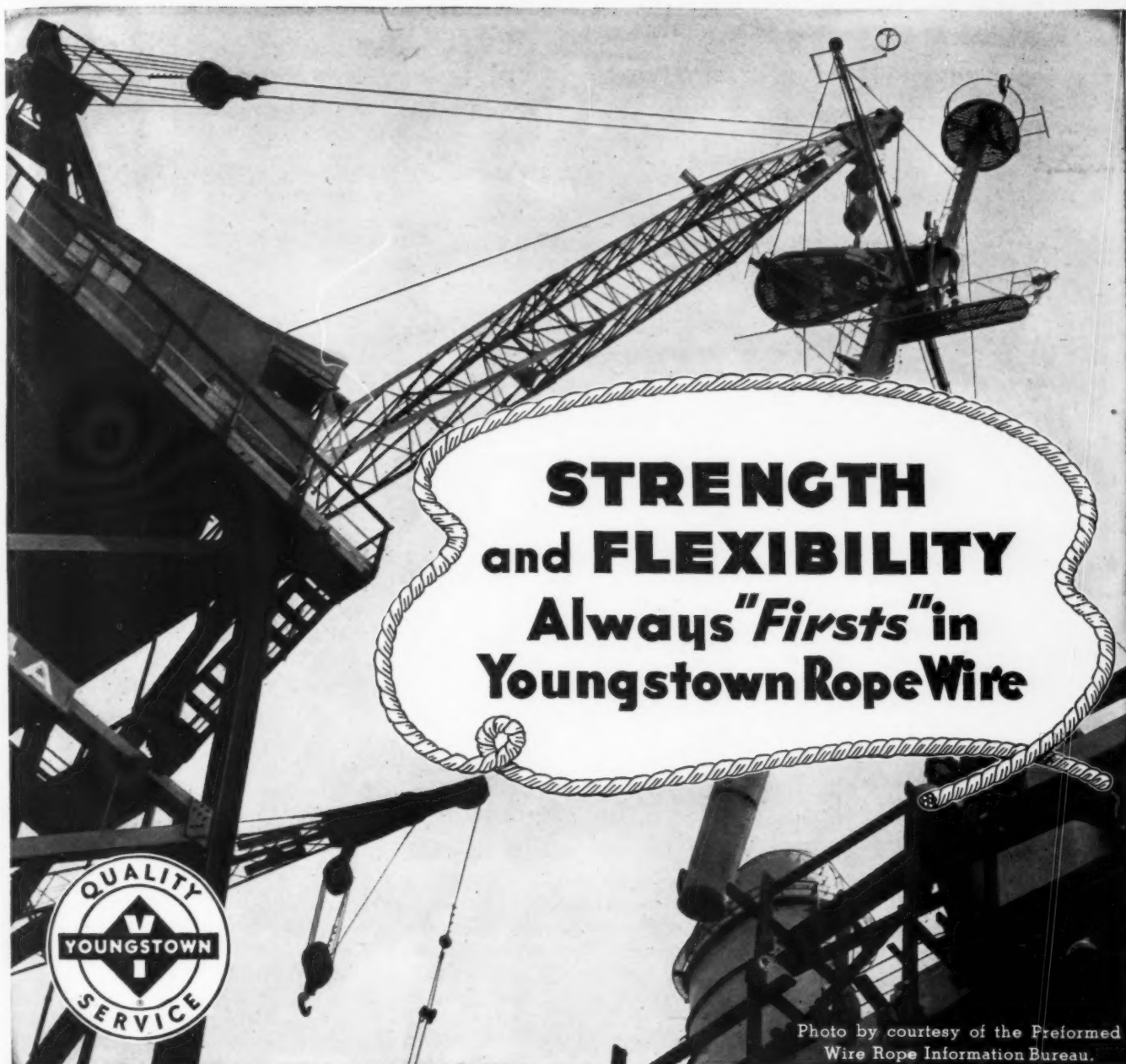
## MOTOR-DRIVEN LABEL GUMMER



MOTOR-DRIVEN Stikfast label gummer takes labels any length and up to  $8\frac{1}{2}$ " in width, and has an adjusting screw to determine the amount of glue to put on the label. The machine will use glass glue, tin glue or other adhesives used in labeling. Hand-fed, the machine is designed for companies that have no need for large type labeling equipment, who have only small runs. One twentieth hp motors are featured on the gummers. Parts will not rust, and the mechanism may be placed in a pail of water overnight to dissolve the glue, it is claimed. Diagraph-Bradley Stencil Machine Corp., 3745 Forest Park Blvd., St. Louis 8, Mo.

(Please turn to page 150)





**STRENGTH  
and FLEXIBILITY  
Always "Firsts" in  
Youngstown Rope Wire**

Photo by courtesy of the Preformed Wire Rope Information Bureau.

## Neptune's Workshop

IN the shipyards, steel cable must be of proven, dependable quality. It must have plenty of extra strength for continuous lifting of many-ton loads. It must flow over sheaves fast, smoothly, with never a kink. It must have long life.

Much of the steel cable used in "Neptune's workshops" is fabricated from Yolectro High Carbon Rope Wire. Like all other Youngstown wire mill products, this wire is of finest quality steel, refined, rolled and drawn to rigid specifications, to

make a product carefully balanced as to strength, flexibility, and toughness.

When you need wire rope, specify that it be woven from Yolectro High Carbon Rope Wire. Then you can depend on your cable's having those essential qualities you want.

## YOUNGSTOWN

THE YOUNGSTOWN SHEET AND TUBE COMPANY

GENERAL OFFICES - YOUNGSTOWN 1, OHIO

Export Offices - 500 Fifth Avenue, New York City

Manufacturers of

CARBON - ALLOY AND YOLOY STEELS

Bars-Rods-Wire-Cold Finished Carbon and Alloy Bars-Sheets-Plates-Pipe and Tubular Products-Conduit-Electrolytic Tin Plate-Coke Tin Plate-Tie Plates and Spikes.

(Continued from page 148)

## MULTIFLAME BRAZING TIPS



THREE new multiflame brazing tips are designed for use in silver brazing, high temperature brazing and in the application of hardfacing alloys. Style 721 is brazed to the end of a short, flexible copper extension and is available in sizes 5, 6, 8, and 10. Style 722 is a dual tube tip brazed to a flexible copper extension, and is available in sizes 5 and 7. Style 723, designed for use where the operator has to be farther away from the work has a tip identical with those on the other styles, but should be used with a standard 10" flexible extension tube. All the tips will operate with various gas combinations. They also have application where aluminum and copper are used. *Air Reduction Sales Co., 60 E. 42nd St., New York 17, N. Y.*

## ROLLER LEVELER FOR THIN-GAGE SHEETS

"INVERTED Type Leveler" has has  $\frac{3}{4}$ " diameter work rolls, said to be the smallest ever built, which flatten alloy and perforated sheets from .010" to .030" thick and up to 28" in width. It flattens thin-gage sheets that cannot be satisfactorily leveled by conventional type levelers, it is claimed. All controls are from levers mounted on top of the machine, and a hand-wheel below them. The lower flight of rolls is tiltable, and not the upper flight, due to simplified construction. *Voss Machinery Co., 2882 West Liberty Ave., Pittsburgh 15, Pa.*

## TILTING-TYPE FEEDING TABLE



STRIP and sheet feeding table has an adjustable tilting top for use with inclined presses as well as horizontal bed types. It is available in a 2000 lb. capacity with table widths from 12" to 24" and lengths up to 96" (including removable extensions). The top may be adjusted to a 30° tilt with several intermediate positions. Using inclined presses, it is possible with this unit to feed strip or sheet stock at the correct angle with full support and proper leveling, and eliminate strenuous manual handling, it is claimed. *Lyon-Raymond Corp., 3586 Madison St., Greene, N. Y.*

## BLOW GUN FEATURES REGULATING AIR VALVE

trigger determines air flow, from gentle puff to a powerful blast. The blow gun is applicable to many types of air cleaning and blowing operations in shops, foundries and factories. The gun has no stuffing box, no discs, and no springs, is made of aluminum and weighs approximately 10 oz. The air connection is standard  $\frac{1}{4}$ " pipe thread. *Superior Manufacturing Co., 954 Public Square Bldg., Cleveland 13, O.*

REGULATING air valve gives the "Bully" blow gun fully controllable air flow. Pressure on the regulating

## FM TRANSMITTER-RECEIVER



NEW 60-watt FM transmitter-receiver combination is designed for fixed station use by police, power, forestry and other public utility groups. Incorporating one or two receivers, the SC-9 permits remote operation over a single-pair telephone line. A preamplifier, tone oscillator and local remote control adapter may be plugged into the rack-mounted control panel. A floor-mounted unit, the SC-9 operates from a 117 volt 50/60 cycle power source. It is approximately 60" high, 22" wide and 16" deep. *Electronics Dept., General Electric Co., Syracuse, N. Y.*

## NEW ENCLOSED FRACTIONAL MOTOR

1500 rpm. Named Micromotor, the unit has 2 square inches of bearing surface, with individually fitted bearings, spaced 5" overall, and 6 cubic inches total volume in oil reservoirs. Circulating lubrication is said to permit continuous operation in any position for unlimited periods. Other features include lubricated skewed rotor; humidity and oil resistant windings; controlled end play. *Redmond Co., Inc., Owosso, Mich.*

TOTALLY enclosed, 1/20 hp, 4-pole shaded pole, a-c motor is designed for continuous fan duty at

## PRECISION ROD CUTTER

DI-ACRO rod parter comes in two models: No. 1 for cutting  $\frac{1}{32}$ " to  $\frac{3}{8}$ " round steel bars; No. 2 for  $\frac{1}{16}$ " to  $\frac{5}{8}$ " round steel bars without distortion, on a production basis.

Two operating handles are provided with each model, a short one for cutting small diameter bars, and a longer offset handle for heavy "parting-off". Three Torrington roller bearings in the multiple lever arrangement make for ease of operation, it is claimed. It has a three-way adjustable material length gauge. In addition to cutting metals, the rod parter will cut many other types of materials. *O'Neil-Irwin Manufacturing Co., 305 8th Ave., Lake City, Minn.*



## LARGE FIRE EXTINGUISHER FOR VEHICLES

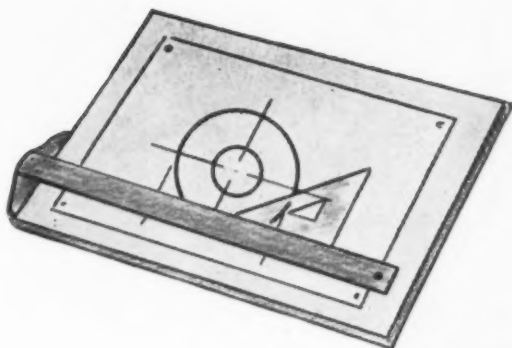
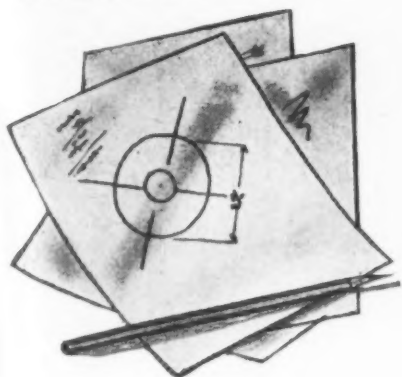
SPLASH-PROOF Foamite Firefoam fire extinguisher for vehicle service has a sealed stopper construction which prevents the chemicals from mixing until needed. A twist of the wrist releases the seal and the extinguisher is ready for use. Similar to the Foamite type carried on fire engines, it produces a fire-killing chemical foam equal to approximately 10 times its own capacity. It stops oil and gasoline fires and prevents refashing, according to the manufacturer. It has Monotype seamless drawn shell construction, is tested to 550 lb. pressure, and has a stream range from 35 to 40 ft. *American-LaFrance-Foamite Corp., Elmira, N. Y.*

## ELECTRIC MARKING TOOL



NAMES and designs can be permanently cut into metal, glass, wood or plastic with this electric marking tool. It vibrates 7000 strokes per minute, has a knurled, adjusting collar to vary the intensity, and is balanced for comfortable holding and handling. The marker, complete with five foot cord and plug, weighs 13 oz., and comes in two models for a-c only: TM-115-60, with a special hard alloy point, and Model TMD-115-60, with a diamond point. *New Britain Machine Co., South St., New Britain, Conn.*

(Please turn to page 152)



## HAVE YOU A PRODUCT DEVELOPMENT PROBLEM?

Are you redesigning your product to meet new conditions . . . new competition?

Are you seeking new and better ways to utilize the selling power of plastics? If so, the solution to your problem may well hinge upon your choice of plastics molder.

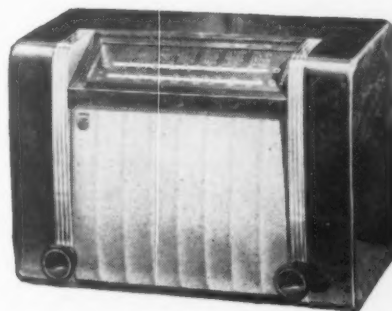
Here at Chicago Molded, product development is one of the most important phases of our business. We work closely with our customers in matters of design and engineering. We help work the "bugs" out . . . we design for economical production . . . select the material that will insure the qualities your product demands. And we produce the finished part, ready to do its job exactly as planned.

For example, the first plastics washing machine agitator was developed and molded by CMPC. The same is true of the first plastics clock case, the first plastics radio cabinet, the first plastics organ keys, and dozens more of today's soundest and best selling plastics products. The same skill which, for a quarter century, has been responsible for developments like these, is available to you NOW.

So . . . if you are working on another notable "first," or are simply redesigning your product for added effectiveness . . . we invite you to discuss your needs with us. A letter or phone call outlining your plans will bring immediate response—without obligation on your part.



**CHICAGO  
MOLDED  
PRODUCTS  
CORPORATION**



1025 N. Kolmar Avenue • Chicago 51, Illinois  
Representatives in principal industrial centers

**COMPRESSION and INJECTION molding of all plastic materials**



# ON 1,220,000



## **Keeps its bearings in a "dust bowl"**

Ordinarily, we wouldn't recommend that you use an open motor on a job like this. This Tri-Clad motor drives a boiler-feed pump in the National Gypsum Company plant at Clarence Center, N. Y. The air surrounding the motor is constantly filled with gypsum dust which must be kept out of the bearings. And it *has* been kept out of the bearings of this Tri-Clad motor, thanks to its specially designed bearing housing and seals. We believe that the Tri-Clad motor you see here proves that even where dust, moisture, or some other hazard is extremely severe for open-motor applications, the extra protection afforded by Tri-Clad motor construction results in longer motor life and lower upkeep.

## *and now-THE TOUGHEST* **TRI-CLAD YET**

Newest addition to the Tri-Clad motor family is the Tri-Clad totally enclosed, fan-cooled motor. It is designed for use in adverse atmospheres—in iron dust, out-of-doors, in hazardous areas, and chemical atmospheres. Available in both standard and explosion-proof types, this Tri-Clad motor gives you these important construction features:

- A cast-iron, double-wall frame which completely encloses and protects the windings and punchings.
- A nonshrinking compound around motor leads which protects motor interior from dust and moisture.
- A rotating labyrinth seal which further protects the motor interior from damage by foreign matter.

# MOTORS

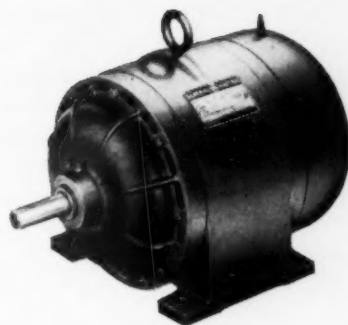


## TRI CLAD

# THE SYMBOL OF EXTRA PROTECTION

Announcement of the Tri-Clad motor, back in 1940, ushered in a new concept of general-purpose motor design. Substantially increased horsepower-per-frame-size, was one feature. Smarter appearance was another. But what really sold more than a million Tri-Clad motors is the *extra protection* we built into them.

Often operating under conditions no general-purpose motor should be asked to meet, Tri-Clad motors built up an enviable record of war-time service. Today, with the "family" including dripproof motors, vertical motors, gear-motors, capacitor-motors, and totally enclosed motors, the Tri-Clad motor is, more than ever, the motor that means basic protection, dependable performance, and minimum upkeep. *Apparatus Dept., General Electric Company, Schenectady 5, N. Y.*



### EXTRA PROTECTION... AGAINST PHYSICAL DAMAGE!

Rigid cast-iron frame and end shields protect vital motor parts from external abuse and prevent resonance. Because they're not at the mercy of a coat of paint, they strongly resist chemical attack and dampness. Cast iron also gives you tight, *metal-to-metal* fits between end shields and frame.

### EXTRA PROTECTION... AGAINST ELECTRICAL BREAKDOWN!

Motor windings of Formex\* wire, together with improved insulating materials, reduce the chances of electrical failure. Heat is dissipated quickly — motor stays young for years and years!

### EXTRA PROTECTION... AGAINST OPERATING WEAR AND TEAR!

Bearing design affords longer life, greater capacity, improved lubrication features. Bearing seals retain lubricant, keep out dirt. One-piece, cast-aluminum rotor is practically indestructible.

\*Trade-mark reg. U. S. Pat. Off.

# GENERAL ELECTRIC

750-255

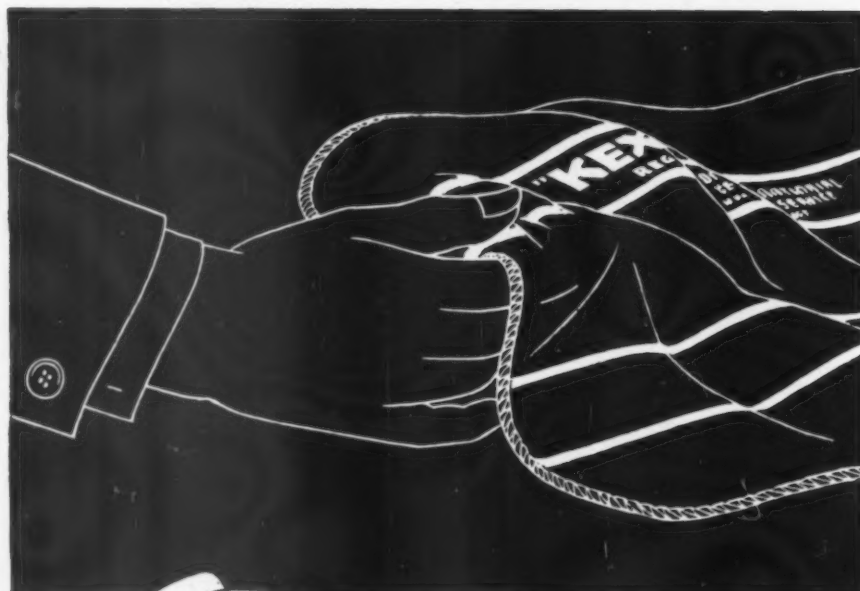


## TRI CLAD

REG. U.S. PAT. OFF.

## MOTORS

- OPEN (DRIPPROOF)
- TOTALLY ENCLOSED
- EXPLOSION-PROOF



Any way you look at it  
**"KEX"** INDUSTRIAL  
 WIPING TOWELS are **SAFE!**

**Safety**—KEX Wiping Towels have no uneven, ragged edging that can catch onto and damage machinery, or cause accidents. They are unlike cast-offs that have served other purposes or their usefulness. A KEX towel is compact and adapts itself to the hand. Their smooth textured surfaces and finishes are important safety factors.

**Hygiene**—KEX Wiping Towels are thoroughly clean—made that way by a special high heat process, delivered fresh, on regular schedules, and in required amounts.

**Economy**—KEX Wiping Towels are rented. Nothing to buy. No expensive inventory. Just a low monthly rental. The first month should show you an appreciable saving on wiping costs.

**Softness**—You can use KEX Wiping Towels on the most delicate polished surface. There isn't a hard seam, button or bit of hidden abrasive to scratch or mar.

**Usable Space**—Big, tough and uniform in size, KEX Wiping Towels can be used right to their very edges.

For complete information, see classified section of your Telephone Directory for nearest KEX distributor, or write KEX National Service, 295 Fifth Avenue, New York 16, N. Y.

**"KEX" NATIONAL SERVICE**  
 REG. U.S. PAT. OFF.

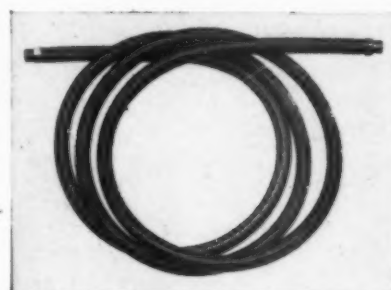


## PLASTIC CLAMP SUPPORTS



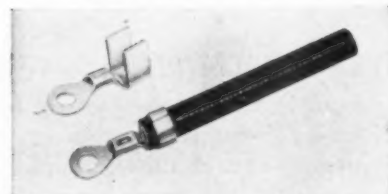
NEW plastic clamp supports are said to have great tensile and impact strength and to be excellent insulators. They withstand temperature changes of 78 degrees below zero to 180 F, are unaffected by atmospheric conditions, are non-corroding and non-sweating, it is claimed. They are pliable and open to any dimension. They have one hole, and lock washers are not needed. The supports are available in 16 sizes from  $\frac{1}{8}$ " to  $1\frac{1}{4}$ " in  $\frac{1}{16}$ " variations. Holub Industries, Inc., Sycamore, Ill.

## FLEXIBLE CONDUCTOR



WATER-COOLED flexible conductor for transmission of high power, high frequency current consists of a brass, water-tight convoluted innercore with an outer braid conductor. A specially compounded high frequency flexible insulation is extruded over the outer braid. Features claimed are: water-cooled for minimum losses at high power; insulation suitable for high frequency currents; freedom of motion between components; lower power losses than conventional  $\frac{1}{4}$ " copper tube. Titeflex, Inc., 533 Frelinghuysen Ave., Newark 5, N. J.

## SMALL-WIRE TERMINAL



ONE-PIECE, small-wire "Hylug" terminals feature a U-shaped tab designed to accommodate the extra-thick insulation of conductors in leads for many types of electrical and electronic equipment. The tabs grip a wide range of insulation sizes, and are said to prevent fraying of the insulation and breakage of conductor strands. The connectors are indented onto conductors, the indent coining the metal into a solid mass, thereby providing a permanent, low-resistance connection, it is claimed. Burndy Engineering Co., Inc., 107 Bruckner Blvd., New York 54, N. Y.

(Please turn to page 156)



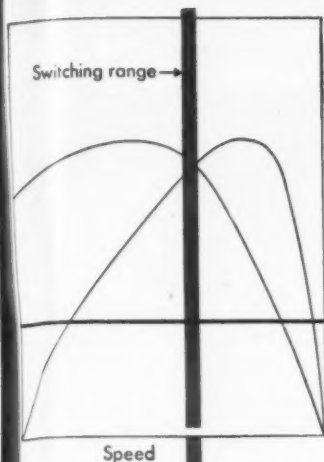
## There's More to Spring Design than Spring Designing

**Example:** One of the bugaboos of capacitor motor design is to switch out the starting winding at the right time . . . not too soon else the motor will jockey between starting and running windings . . . not too late or the starting winding may burn out.

Ordinarily, a tendency to switch out at the wrong speed is not apprehended before the motor is tested, and at that stage can be costly in terms of assembly time. If you are a motor manufacturer you can eliminate the possibility of trouble by using Hunter springs, quality-controlled and color-coded to match variations in your centrifugal mechanisms.

The centrifugal mechanism is not merely a riddle in spring design. It is more accurately a matter of engineering strategy. Hunter, has, in addition to its spring designers, a separate complement of *electrical* and *mechanical* engineers. These men can be maneuvered quickly into position to aid spring designers. Hunter also brings to bear on your problem the only testing equipment of its kind, especially devised by the Hunter Special Apparatus Division for attaining your objective.

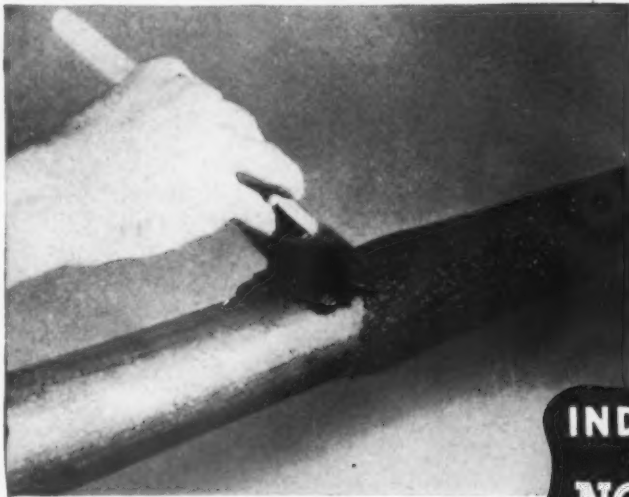
More information about this special service for motor makers (or anyone with a similar centrifugal application) is yours on request.



**HUNTER PRESSED STEEL COMPANY**  
LANSDALE, PENNSYLVANIA

Springs, Metal Stampings, Wire Forms, Mechanical and Electrical Assemblies

Now available, these Hunter designed and built Spring Load Testers (5# max. cap.) Supply limited to Hunter customers at present. Details of sales arrangement on request.



**COVER  
PIPES  
TANKS  
WALLS**

**INDUSTRIAL  
NoDrip**

Anyone can brush, trowel or spray NoDrip on any clean, dry surface. Goes on like plaster, forms a seamless, protective coating which effectively **stops condensation drip.**

NoDrip keeps equipment and floors safe and dry; prevents corrosion of metal and prolongs its life. Acid, alkali and brine resistant. Comes in 1, 5 and 55 gallon drums, ready for use.



**TRY NoDRIP**

Apply NoDrip to a small area, compare the results with uncovered portions.

Send for Free NoDrip Handbook

**J. W. MORTELL CO.** 547 Burch St., Kankakee, Ill.

**PROVE IT...  
IN YOUR OWN PLANT!**

**TRY "Height-that's-right  
seating" 30 DAYS FREE**

Let us send you one Kewaunee Automatic Adjustable Chair or Stool to try 30 days without cost or obligation. Test it with workers of different heights—see how by simply lifting the seat your employee instantly gets "height that's right" seating. No fussing with screws, bolts or tools. Watch production go up when comfort comes in, through the use of—



**Kewaunee**  
**AUTOMATIC ADJUSTABLE CHAIRS and STOOLS**

**4 HEIGHT RANGES—12-15", 15-20", 18-26", 24-35"**

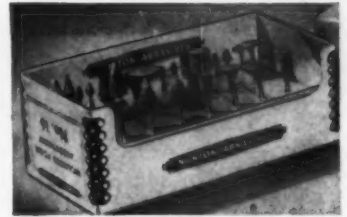
Have one piece reinforced base with casters or glides. Tan-tested for strength. Adjustable foot-rest furnished if desired.

Send for Chair or Stool to try 30 days or write for circular and full details.

C. G. Campbell, President

**KEWAUNEE MFG. CO., 5006 S. Center St., Adrian, Michigan**

**MOUNTED POINT KIT**



KIT of mounted points, known as the Norton #16 Mounted Point Assortment, is made up of one each of 16 most popular sizes and shapes. Box serves as shipping container and holder while points are in use. Each point has its own location, stamped with its number to facilitate re-ordering. The points are made of 38 Alundum abrasive vitrified bonded and cemented on steel spindles. Norton Co., Worcester, Mass.

**FITTINGS  
FOR USE WITH  
ALL FLUID  
PROCESSES**

**DIE FORMED** fittings, for use with chemical and all fluid processes, are claimed to solve corrosion and

turbulence problems. They permit use of light gauge tubes and eliminate the need for special fittings, according to the manufacturer. Available in Inconel, Nickel, and Monel and in stainless steel 304, 347 and 316, they are die-formed from the identical tube specified for any installation. A new lock ring is said to present an efficient method of joining with silver brazing or soft solder (may also be butt welded). Known as "Nibcoloy wrought fittings", they are available in eleven types, in sizes from 1/4" OD to 4" OD. Catalog available. Northern Indiana Brass Co., Elkhart, Ind.

**CYLINDRICAL GRINDING  
AND INDEXING ATTACHMENT**

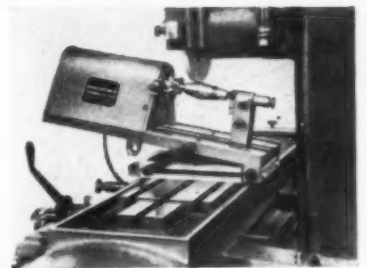


ILLUSTRATION shows attachment No. 616 for use on surface grinders to adapt them for the dry grinding of small cylindrical work and work requiring indexing. Straight cylindrical and tapered work is ground between centers, or if 1/2" diameter or less, it can be held in the indexing spring chuck. Indexing is accomplished by the spring chuck. Spring collets for the chuck accommodate round work of diameters from 1/8" to 1/2" inclusive. Picture shows the attachment grinding tapered work between centers. The attachment centers swing 6" diameter and take work 5 1/4" in length. Literature available. Brown & Sharpe Mfg. Co., Providence, R. I.

(Please turn to page 160)



## The Victory of Standardization

Mass production during World War I brought into sharp focus the need for screw thread standards throughout industry. Interchangeable parts were the essence of America's assembly lines.

When the National Screw Thread Commission met in Washington during the early 20's, "Greenfield's" president, the late F. O. Wells, urged strongly the adoption of standards for

threaded parts. The efforts of Mr. Wells and others produced results which have meant vast savings to users of precision tools and have been a key to the industrial growth of the country. GTD "Greenfield" continues today to work for screw thread standardization as it has during its entire 75 years of pioneering leadership in the threading tool field.



The years following World War I found "Greenfield" pioneering in the development of ground thread taps. Ground on centers which themselves are lapped for high precision, a ground thread tap has an outside diameter, pitch diameter, shank and chamfer that are highly precise. This method of manufacture revolutionized threading tool performance by making possible an accuracy previously impossible on a production basis.



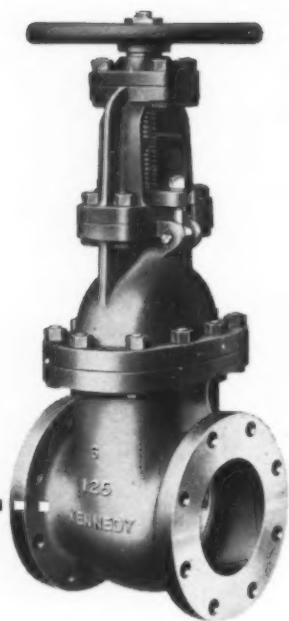
**GREENFIELD**


**TAP and DIE CORPORATION**  
Greenfield - Massachusetts

**The GEOMETRIC TOOL COMPANY**  
New Haven, Connecticut - In Its Fifty-Fourth Year  
A DIVISION OF GREENFIELD TAP and DIE CORPORATION



specify  
this.....  
on the  
**outside**



to get  
**durability**  
on the   
**inside**

Kennedy Valves are durable. Look at this iron-body gate valve . . . note the stout construction of the disc . . . the exceptionally thick and wide disc and seat rings . . . the heavily proportioned stem threads.

You get these and many other features when you specify Kennedy Valves. Want full details? . . . write for a copy of Kennedy's 240-page Catalog. It contains complete information on the Kennedy bronze and iron-body gate, globe, angle and check valves, pipe fittings, flanges, and other valves and accessories.

**BUY FROM YOUR LOCAL DISTRIBUTOR**

KV-148

# KENNEDY valves-pipe fittings-fire hydrants

THE KENNEDY VALVE MFG. CO., ELMIRA, NEW YORK *Offices and Warehouses in Principal Cities*



*The Kennedy Iron-body Wedge Gate Valve is made for a range of pressures with non-rising stem or outside-screw-and-yoke. Illustration shows standard type, outside-screw-and-yoke.*

# WHY DAYTON V-BELTS

## *Last Longer*

**MIXING ASPHALT 15 YEARS**  
*without a single V-Belt Failure*

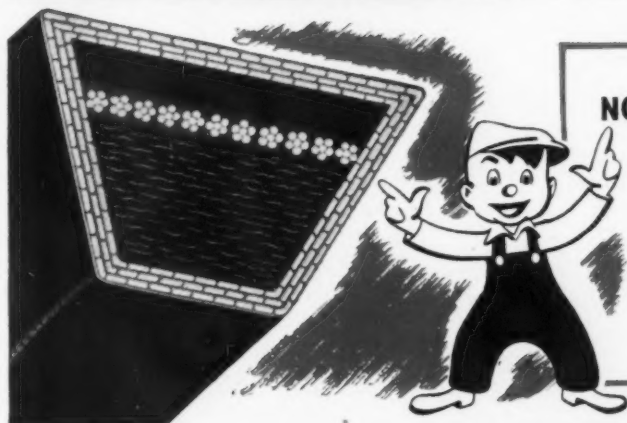


For 12 hours a day, every working day since the fall of 1931, the twin overhead asphalt mixers of a large building materials manufacturer were driven by two Dayton V-Belt Drives of 13 V-Belts each. The machines mix 900 tons of asphalt daily. Despite rock dust in the air, the heavy demands of a tough mixing job and other adverse operating conditions, not a single V-Belt failure occurred in over 15 years!

Dayton V-Belts deliver years of trouble-free service because they are built of *specialized* rubber, specially-treated Raytex Cords and other materials that give them the extra strength and toughness needed to take grueling punishment without stretch or failure. It's one reason why Dayton V-Belts can help you solve your power transmission drive problems efficiently and economically. Your Dayton Distributor will gladly help you select the correct V-Belts and pulleys for any power drive. Call him today.

**DAYTON RUBBER • DAYTON, OHIO**

Branch Offices: Atlanta • Boston • Chicago • Cincinnati  
Cleveland • Dallas • Detroit • Los Angeles  
Minneapolis • New York • Philadelphia • St. Louis



**NOW! \* Rayon Cords PROVIDE DAYTON V-BELTS**

1. MINIMUM STRETCH
2. GREATER FLEX STRENGTH
3. LONGER V-BELT LIFE

\* Rayon Cords are specially processed by Dayton for use in V-Belts to provide the most efficient and economical power transmission service for your needs. For the complete story write for Booklet A-469.



**V-BELT BUYERS!**

A leading mill supply house near you stocks Dayton V-Belts...  
Look for the name in the yellow pages of your telephone directory

# Dayton Rubber

THE MARK OF TECHNICAL EXCELLENCE IN NATURAL AND SYNTHETIC RUBBER

THE WORLD'S LARGEST MANUFACTURER OF V-BELTS

# 60 YEARS OF SERVICE to INDUSTRY

## SUPPLYING WASHERS and STAMPINGS

OF EVERY DESCRIPTION  
FOR EVERY PURPOSE...  
UTILIZING MORE THAN  
22,000 SETS OF DIES  
Let Us Quote On Your Needs!



**WROUGHT WASHER MFG. CO.**  
THE WORLD'S LARGEST PRODUCER OF WASHERS

2113 SOUTH BAY STREET • MILWAUKEE 7, WISCONSIN

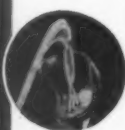


**5** reasons  
why they're  
favored by  
industry



Halsey Taylor Electric Coolers are Industry's favorite because:

1. They're economical to operate and maintain
2. They have patented practical automatic stream control
3. They have a background of years of satisfaction
4. They are available in various capacities for any plant
5. They are manufactured by a concern devoted exclusively to the making of fountains and coolers



THE HALSEY W. TAYLOR CO., WARREN, O.

**Halsey-Taylor**

ELECTRIC COOLER FOUNTAINS

### EIGHT-WAY PALLET



NEW lightweight steel pallet permits forks of a lift or pallet truck to be slipped between top and bottom sections from eight different directions, viz, sides and corners. Sections are held together

by hollow steel posts, crimped to hold the unit together without welding. Stakes can be fitted into the hollow posts at the corners and sides. The bottom part has four open sections so that it may be used with pallet trucks. Available in six sizes, the pallet will hold up to 20,000 lbs. of boxed bagged materials or merchandise. Monroe Auto Equipment Co., Monroe, Mich.

### HYDRAULIC PUMPS



HIGHER pressure is permissible for intermittent operation with new line of axial piston, constant displacement type pumps. These high pressure, high volume pumps provide 3500 psi for continuous duty operation and deliver volumes of 6, 17, and 32 gpm respectively at 1200 rpm, maintaining volumetric efficiencies of not less than 95%, according to the manufacturer. They are quiet at all operating pressures within their range, it is claimed. Denison Engineering Co., 1185 Dublin Road, Columbus, O.

### SAW HORSE AND SCAFFOLD CLAMPS



SAW Horse clamp and scaffold clamp consist of all-metal hinged cap that exerts bear trap action on the cross piece. Positive, cam-action lock eliminates possibility of collapsing, it is claimed. The saw horse clamp is of 16 gauge steel, weighs 4½ lbs. per pair and supports one ton. It uses 1" x 4" legs and 2" x 4" cross piece. The scaffold clamp is of 16 gauge steel, and weight 7½ lbs. per pair including brace and supports one ton. It uses 2" x 4" legs and cross piece. Safety engineers have approved its use up to 8 ft., manufacturer says. Manufactured by Pan-Continental Corp., Los Angeles 15, Calif. Distributed by Cappy Rix, 1507 W. Seventh St., Los Angeles 14.

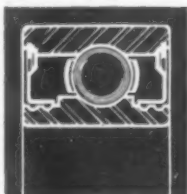
(Please turn to page 164)



3

# The "Cartridge" Bearing

**TOMORROW'S BEARING—  
HERE TODAY**



Standard Type

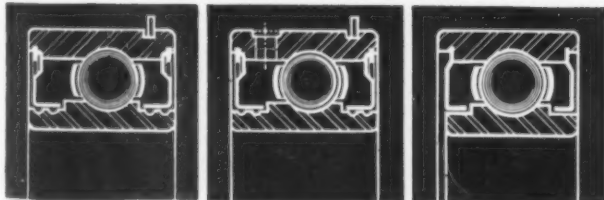
This revolutionary forward step in bearing design has proved itself on the toughest assignments for the past eleven years. It is not only a highly efficient precision bearing, but its self-sealing features also help you improve the performance and lower the cost of producing your own equipment through streamlined design. Here are the facts:

*Why  
it is a  
Better  
Bearing*

*How  
it aids  
Your  
Design  
Problems*

- 100% more grease capacity than any other standard self-sealed bearing.
- Factory packed with Norma "Stability-Tested" grease. Relubricate only after years of service.
- Grease retained close to balls and raceways by built-in, wearless seals.
- Flanged seals with grease grooves provide a dam against leakage; prevent entrance of dirt.
- Eliminates up to 10 machining operations and up to 22 parts required with some conventional mounting.
- Prevents slippage, peening, cocking—obviates use of steel inserts in soft metal housings.
- Increases shaft strength; reduces overhang; provides compactness—locknuts and wide sealing parts are eliminated.

HERE ARE MAJOR VARIATIONS:



**Shoulder (snap) wire.** No housing shoulders needed. Seals removable.

**Grease filling opening.** Shoulder ring optional. Seals removable.

**Permanently sealed.** For shafts under 20 m/m. Seals not removable.

NOTE: Write for "Cartridge" Bearing Catalogue. Address Dept. W



PATENTED BY NORMA-HOFFMANN

**"NORMA-HOFFMANN"**

PRECISION BALL, ROLLER AND THRUST BEARINGS

NORMA-HOFFMANN BEARINGS CORPORATION  
STAMFORD, CONNECTICUT  
FIELD OFFICES: New York, Chicago, Cleveland, Detroit,  
Pittsburgh, Cincinnati, Los Angeles,  
San Francisco, Portland, Ore., Seattle, Phoenix

## CUT YOUR LABOR COSTS . . .

*by replacing heavyweight tools  
for driving up to No. 14 wood  
screws and 1/4" nuts . . .*

# NEW Thor Lightweight Electric

EQUIPPED WITH

HEAVY  
DUTY

4 5/8 lbs.

Lever Type

The popular assembly line suspension type tool with greatly reduced weight for faster operation on continuous production. Three speeds—500, 750 and 1,000 r.p.m. Positive or adjustable slip clutch. Optional attachment for right angle driving.

Attachments, bits and socket wrenches are interchangeable.



# Screwdrivers

THOR "F-TYPE" MOTORS

HEAVY  
DUTY

4 <sup>3</sup>/<sub>4</sub> lbs.

Pistol Grip  
Type

The lightest hand-held tool in the heavy duty class—fashioned after famous Thor midjet-type drills. Three speeds—500, 750 and 1,000 r.p.m. Positive or adjustable slip clutch. Optional attachments for 25-degree and right angle driving.

Call your Thor Distributor for a demonstration.

**Thor**

PORTABLE POWER

**TOOLS**

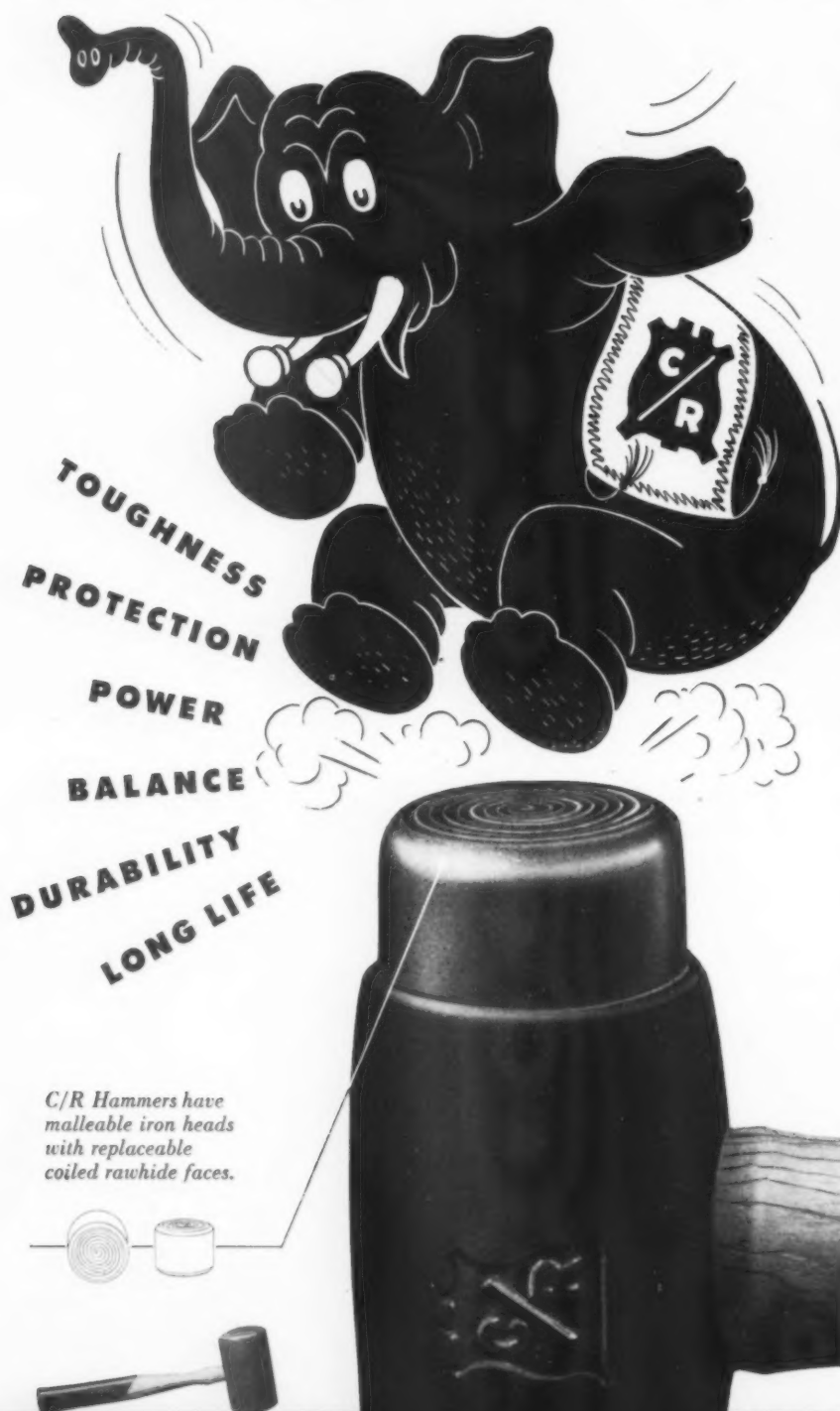
INDEPENDENT PNEUMATIC TOOL CO., 600 W. JACKSON BLVD., CHICAGO 6, ILLINOIS

Export Division: 330 West 42nd St., New York 18, New York

Birmingham Boston Buffalo Cincinnati Cleveland Denver Detroit Houston Los Angeles Milwaukee New York  
Philadelphia Pittsburgh St. Louis St. Paul Salt Lake City San Francisco Toronto, Canada Sao Paulo, Brazil London, England



**RAWHIDE** gives you *more* in soft hammers and mallets. And *Chicago Rawhide* gives you exceptional power and maximum protection. C/R hammers and mallets absorb shock, deliver powerful blows, protect finished surfaces and stand up under tough use. For hammers and mallets that never split, crumble or mushroom, always ask for *Chicago Rawhide*.



C/R Hammers have malleable iron heads with replaceable coiled rawhide faces.

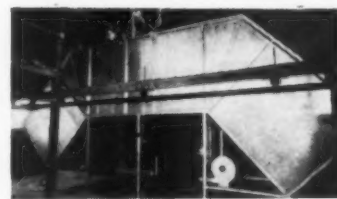
**CHICAGO Rawhide MFG.CO.**

1203 ELSTON AVENUE

CHICAGO 22, ILLINOIS

Other C/R maintenance products are: round, flat, twist belting; belt pins and lacings; gears, pinions, gear blanks; aprons, hand leathers; hydraulic packings.

#### RUST-PROOFING BY INFRARED RAYS



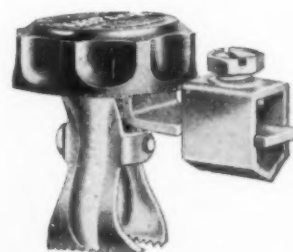
RUST-PROOFING process effected by the Burdett Infra-Red Gas-Fired Burner is said to remove grease and similar film and simultaneously produce a blue surface on the metal that is extremely rust resistant. This operation takes approximately five minutes. Maker states that metal sheets treated by this process have been tested under severest weather conditions for as long as five weeks without the slightest indication of rust; similar results were obtained in acid atmosphere tests. *Burdett Mfg. Co., 3433 W. Madison St., Chicago, Ill.*

#### NEW HONING MACHINE



UNIT-CONSTRUCTED, single spindle, heavy duty honing machine has a quill type spindle for honing bores from 1" to 4" diameter up to 9½" long. The machine is made up with the head unit, hydraulic unit and electrical unit assembled on the column and base of any other Micromatic microhoning machine. Increased adaptability of production tooling is said to be possible with this new unit, since the machine may be assembled around the most adaptable column, fixture and base as required by the part. *Micromatic Hone Corp., Detroit, Mich.*

#### ALL-PURPOSE CLAMP



HEAVY-DUTY, shock-proof U-66 Kliplok Test Clamp grips round or flat objects up to 1" in diameter or width. It can be attached to ends of cords on portable equipment, and clipped on fuse clips, meter or motor terminals, lugs, battery posts, etc. A twist of finger-tip knob exerts pressure. It will carry up to 150 amp continuously and 200 amps intermittently. Solderless lug accommodates #2 wire minimum: #0 wire maximum and swivels around the clamp, permitting wire or cable to hang in a natural position. *Trico Fuse Mfg. 2948 North 5th St., Milwaukee 12, Wisc.*

(Please turn to page 166)

EEL WYCKOFF COLD DRAW

WYCKOFF COLD DRAW

DRAWN STEEL WYC

KOFF COLD DRAW

STEEL WYCKOFF

OLD DRAWN STEEL

WYCKOFF COLD DRAW

EEL WYCKOFF COLD DRAW

WYCKOFF COLD DRAWN ST

FF COLD DRAWN STEEL WY

WYCKOFF COLD DRAWN S

EEL WYCKOFF COLD DRAW

CKOFF COLD DRAWN STEEL

OLD DRAWN STEEL WYCKO

FF COLD DRAWN STEEL

DRAWN STEEL WYCKOFF C

WYCKOFF COLD DRAWN ST

EEL WYCKOFF COLD DRAW

N STEEL WYCKOFF COLD D



*Made to your Order!*

Wyckoff Pre-Treated Cold Finished Steel Bars are custom quenched and tempered to your specified physical properties, —then cold finished for desired surface finish and size.

This *Pre-Treating* saves you money . . . eliminates handling and heat treating operations in your shop . . . and yields greater uniformity of physical properties than either bar treating in small batches or parts treating.

Get the advantage of steel that is Pre-Treated to suit your finished product before delivery . . . save these operations in your plant . . . enjoy this greater uniformity of parts by specifying Wyckoff Pre-Treated Cold Finished Bars.

# WYCKOFF

*Quenched and Tempered*

**COLD FINISHED STEELS**

*Wyckoff* **STEEL COMPANY**

FIRST NATIONAL BANK BUILDING • PITTSBURGH 30, PA.  
3200 SOUTH KEDZIE AVENUE • CHICAGO 23, ILLINOIS

Works at: AMBRIDGE, PA.; CHICAGO, ILL.; PUTNAM, CONN.; NEWARK, N. J.

Manufacturers of Carbon and Alloy Steels—Turned and Polished Shafting  
—Turned and Ground Shafting—Wide Flats up to 12" x 2"

# TRIPLEX MEANS STRENGTH



## nuts...

Semi-finished, hot-pressed, square, hex, jam and castellated hex.

## bolts...

Machine, stove, carriage, lag, plow, step and sink.

## cap screws...

In all popular sizes up to 1" diameter and 8" lengths.

Triplex aims to lead the parade in holding power. There is no substitute for strength, where unfailing strength is needed. That applies to cap screws as well as all other Threaded Fasteners. If you don't have our new catalog, shoot that letter in now, for a turn to TRIPLEX is a turn for the better.

**THE TRIPLEX SCREW COMPANY**

5331 GRANT AVENUE, CLEVELAND 5, OHIO

**TRIPLEX THREADED FASTENERS**  
CAP AND SET SCREWS • BOLTS, NUTS AND RIVETS

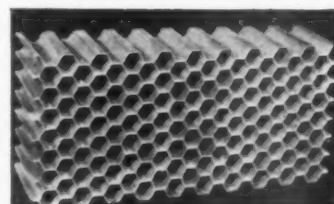
## HIGH SPEED ELECTRIC DRILL



SELF-CONTAINED "Drill-speeder" high speed electric drill fits into the chuck of any standard drill-press, lathe, milling machine or specially designed machines and fixtures. Equipped with 3/8"

straight shank or No. 2 Morse taper shank, it supplies its own power, 1/16 hp, and 17,000 rpm for drills from No. 80 up to 1/8" diameter. It has 3 1/2" diameter cast iron table. Clearance to post permits drilling to center of 6" line. Chuck and motor parts are balanced to eliminate vibration and keep drill breakage at a minimum, it is claimed. Bulletin 730 available. *Dumore Co., Racine, Wis.*

## NEW SANDWICH CONSTRUCTION



RESIN impregnated material, formed into hexagonal shaped cells, comprises "Honeycomb", a new sandwich laminate said to be suitable for making shipping containers, particularly for air freight, pallets, and other industrial items. "Honeycomb" core, a manufactured material, weighs less than half the weight of select end grain Balsa wood. By selecting the sheet material, controlling the amount of resin impregnation and fixing the size and shape of the cell, the physical characteristics of "Honeycomb" may be varied, it is said. It was co-developed by the *Glenn L. Martin Co.* and *United States Plywood Corp., New York, N. Y.*

## LIGHT PRODUCTION BAND SAW



DESIGNED for small wood, plastic and sheet metal shops, this saw is said to have the capacity, power and rigidity for high speed precision contour sawing and smooth finish. Its throat depth is 16", work thickness capacity 12 1/8", table size 20"x20" with 45° tilt right and 5° left. Model HS-4 offers 2000, 3000, 4000 and 5000 fpm speeds through a four-step cone pulley. Model LHV has a high and low variable speed range (100 to 3000 fpm and 1700 to 5100 fpm). Standard attachments are available, including contouring attachment. *The DoAll Co., 254 N. Laurel Ave., Des Plaines, Ill.*

(Please turn to page 168)



## RUST PREVENTION

# \$100,000 Worth of Hand Tools saved from "RUST"

NEW PRODUCT DOES THE JOB AFTER PLANT  
CONDUCTS EXHAUSTIVE TESTS

"Some time ago, we were called in by a prominent manufacturer.\* Corro-

### Lubrication Engineer's Report

sion of all metal parts in his entire plant had gone out of control. The machine shop and hand tools, valued in excess of \$100,000, were a sorry looking 'dusty-brown.' Everything they had used in the way of rust preventives heretofore failed to solve their difficulty.

"After studying their problem we recommended our General Purpose



Anti-Corrode No. 100 and suggested that they give it exhaustive tests. Their chemist did so and we are happy to report that it solved their problem.

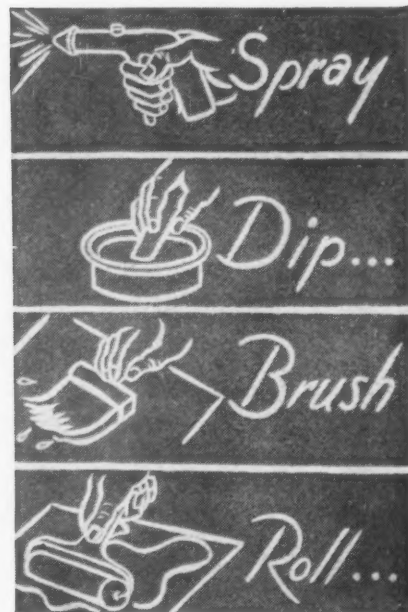
"They have since used over 150 gallons of this Anti-Corrode on everything metal in their plant, including small hand tools such as pliers and screw drivers."

Anti-Corrode No. 100 is one of several new types of Cities Service protective coatings for metals. Designed to prevent corrosion of raw stocks, finished parts and completed ma-

chines, it adheres firmly, displaces moisture and protects longer than many materials now on the market.

### Easy To Apply

Apply Anti-Corrode by ordinary work-shop methods. Spray, dip, brush or roll it on. The protective film is continuous and non-porous—does not break at sharp edges nor rupture on flat surfaces. It need not be removed from metal to be stamped, drawn or otherwise formed.



Cities Service will demonstrate the many advantages of Anti-Corrode to you in your own plant. Contact the branch office nearest you or write Cities Service Oil Co., 60 Wall Tower, New York 5, N. Y.

\*Name on request

**Cities Service means Great Service**



Cities Service Oil Co.  
NEW YORK - CHICAGO  
Arkansas Fuel Oil Co.  
SHREVEPORT, LA.

(This offer available only in Cities Service marketing territories East of the Rockies.)

CITIES SERVICE OIL COMPANY  
SIXTY WALL TOWER  
NEW YORK 5, N. Y., ROOM 180

Gentlemen: I'd like to test ANTI-CORRODE No. 100 on my own equipment FREE OF CHARGE. Send me details.

NAME .....  
COMPANY .....  
ADDRESS .....  
CITY ..... STATE .....



COURTESY WESTINGHOUSE ELECTRIC CORPORATION

## American Chain at Work

Wherever things are made, chain plays an important part—in production, or in the product itself. Your AMERICAN CHAIN distributor is a responsible source, not only for Endweldur Sling Chains but for all types of welded and weldless wire and flat metal chain—a complete line of chain fittings, attachments and assemblies—repair links—cotter pins.

**ACCO**

York, Pa., Chicago, Denver, Detroit, Los Angeles, New York, Philadelphia, Pittsburgh, Portland, San Francisco, Bridgeport, Conn.



**AMERICAN CHAIN DIVISION  
AMERICAN CHAIN & CABLE**

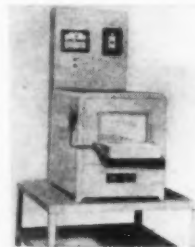
*In Business for Your Safety*

### NEW POWER PRESS BRAKE



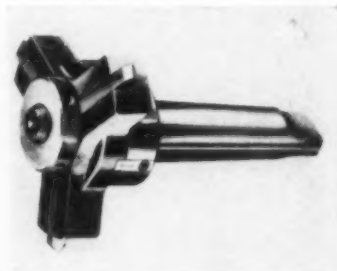
MOTOR-DRIVEN slide adjustment with motor and controls readily accessible, is feature of this power press brake. The slide can be adjusted out of parallel with the base, the magnitude of the adjustment showing on indicators located on each end. The brake is operated by a multiple-disc friction clutch and a friction brake. It is of 120 tons capacity and operates at a speed of 30 strokes per minute. It will form mill steel in these sizes: 7/16" by 4 ft.; 5/16" by 6 ft.; 1/4" by 8 ft.; and 3/16" by 10 ft. Furnished with flywheel for belt drive, motor drive available. *Columbia Machinery & Engineering Corp., Hamilton, O.*

### FORCED CIRCULATION FURNACES



TWO furnaces of the recirculating air draw type. Model ACL (for temperatures to 900 F) and Model ACH (for operation to 1200 F), may be used for tempering or drawing of both carbon and high speed steels, non-ferrous heat treating, etc. They are also suited to production of small parts, and for laboratory testing of paints and plastics, it is claimed. Temperature uniformity of plus 5 minus 0 degrees can be obtained in both models. Temperature control is effected by the Cooley selective power modifier, operating with an indicating pyrometer. Either furnace will accommodate 50 lbs. of parts. Overall furnace dimensions are 20" wide, 25" high, 24" deep. *Cooley Electric Mfg. Corp., Indianapolis Ind.*

### INDEX TYPE BORING HEAD



NEW Kwik-Size boring tool performs rough, semi-finish and finish boring operations without changing cutter bits, efficiently and economically on any run (Please turn to page 170)



**N**O LONGER need you guess about which make of truck to buy! Now you can know, beforehand, *which* one of all five sales leaders has delivered the longest service, which has the longest life-expectancy! Ford!

And the proof is *certified* proof! Certified by the same scientific methods used by life insurance companies in computing their rates!

**4,967,000 Trucks Studied.** Wolfe, Corcoran and Linder, noted New York Life Insurance Actuaries, assembled the records of all trucks of the five sales leaders registered from 1933 through 1941—a total of 4,967,000 trucks! Then they prepared *truck* life-expectancy tables in the same identical manner in which they prepare *human* life-expectancy tables for life insurance companies.

**Ford Wins!** Up to 19.6% longer life for Ford Trucks! Up to 19.6% longer life than the four other sales leaders! That's what the certified truck life-expectancy tables prove! The reason? Ford knows how to build trucks to last longer. Ford Trucks are built stronger! See your Ford Dealer today. He'll show you why it's good business to wait for the truck with the longest life-expectancy—Ford!

*Certified proof*

**FORD TRUCKS LAST LONGER**

**The life-expectancy of a Ford Truck is:**

- 13.1% longer than that of Truck "B"
- 3.2% longer than that of Truck "C"
- 7.6% longer than that of Truck "D"
- 19.6% longer than that of Truck "E"

**OFFICIAL ACTUARIAL CERTIFICATE**

Based on the application of sound and accepted actuarial methods to the actual experience as measured by truck registrations, we hereby certify that, in our opinion, the accompanying table fairly presents the relative life-expectancy of the trucks involved.

**WOLFE, CORCORAN AND LINDER**  
Life Insurance Actuaries, New York, N. Y.



## OUT OUR WAY



## IS YOUR SHOP

## THE "STOMPING-GROUND" FOR ACCIDENTS?

Contrary to the popular saying, accidents don't just happen! They are caused . . . and the most frequent cause of accidents in the shop is greasy, oil-slick floors. Put a firm footing under your employees with SOL-SPEEDI-DRI . . . and watch accident-rates take a fall! SOL-SPEEDI-DRI is the fast-working absorbent that soaks up all liquids like magic. Reduces fire-hazards, too, for SOL-SPEEDI-DRI will not readily burn, even when oil-soaked.

Safety and Maintenance Co., Inc., No. 1 Wall Street, New York 5, N. Y.

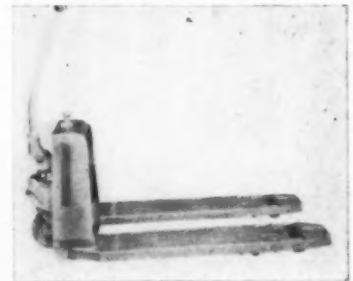
Warehouse stocks maintained in principal cities of the United States and Canada



(Continued from page 168)

of boring work of more than three pieces. The boring head is merely indexed for individual cuts to accomplish this. The tool is used for stub bar boring only and is adapted for rapid standard or heavy duty precision work. Either carbide cutting tools or high speed steel bits may be used in the boring head. Using  $\frac{3}{8}$ " by  $\frac{3}{8}$ " tool bits and different diameter heads, it is possible to bore holes from 4" to 8 $\frac{1}{8}$ " in diameter, it is claimed. Tool bits can be adjusted in each size head to give a range of approximately  $\frac{3}{8}$ " variation of diameter. *Kaukauna Machine Corp., Kaukauna, Wis.*

## HYDRAULIC PALLET TRUCK



PLASTIC wheels can be substituted for the standard metal wheels at the end of the forks and at the front of the Lewis-Shepard multiple stroke hydraulic pallet truck to reduce floor wear. "Spring-Lift" booster rollers mounted in back of the rear wheels are said to eliminate bumps, the need for chamfering of boards, and reduce wear on the pallets. The truck is compact and easy to handle. It is available in capacities ranging from 1000 to 6000 lbs and is adaptable to either single or double, 2-way or 4-way pallets. *Lewis-Shepard Products, Inc., 328 Walnut St., Watertown, Mass.*

## MECHANIZED WHEELBARROW



MECHANIZED wheelbarrow carries a one-ton load at speeds up to 15 mph. Called the Scoottruck, the unit has special airplane type tires and can run anywhere without special roads or runways, according to the manufacturer. It weighs 1,000 lbs. Dumping is controlled from the driver's seat, or from the side of the bucket. Single tail wheel steering aids maneuverability. It has a 6 hp, air-cooled Novo engine, 4-speed transmission and reverse. *Novo Engine Co., Lansing, Mich.*

(Please turn to page 172)



**MEET THE MAN**  
with an armful of ALUMINUM,  
and wings on his feet . . . .

## YOUR ALCOA DISTRIBUTOR

Service . . . lightning-fast service . . . is his special pride. He is only an overnight jump from most towns. And his shipping staff can do wonders at getting packages onto buses and trucks and airplanes when you need Alcoa Aluminum in a *real* hurry.

He's in the business of carrying large and complete stocks of all the Alcoa Aluminum Standard Sheet, Shapes, Fastenings, Rod, Bar, and Tubing that you are likely to need.

ALUMINUM COMPANY OF AMERICA,  
1931 Gulf Building, Pittsburgh 19, Pa.

**MORE people want**  
**MORE aluminum for**  
**MORE uses than ever**

**For quick, off-the-shelf shipments,**



**PHONE YOUR NEAREST  
ALCOA DISTRIBUTOR**

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BUFFALO, NEW YORK Whitehead Metal Products Co., Inc. Phone: CLEVELand 1475	NEW ORLEANS, LOUISIANA Metal Goods Corporation Phone: CANal 7373
CAMBRIDGE, MASSACHUSETTS Whitehead Metal Products Co., Inc. Phone: TRowbridge 4680	NEW YORK, NEW YORK Whitehead Metal Products Co., Inc. Phone: WATkins 9-4900
CHICAGO, ILLINOIS Central Steel & Wire Company Phone: REPUBLIC 3000	PHILADELPHIA, PENNSYLVANIA Edgcomb Steel Company Phone: GARfield 3-6300
CHICAGO, ILLINOIS Steel Sales Corporation Phone: CRAWford 4400	PHILADELPHIA, PENNSYLVANIA Whitehead Metal Products Co., Inc. Phone: BALdwin 9-2323
CINCINNATI, OHIO Williams & Company, Inc. Phone: CHerry 4700	PITTSBURGH, PENNSYLVANIA Williams & Company, Inc. Phone: CEDar 8600
CLEVELAND, OHIO Williams & Company, Inc. Phone: EXpress 7000	PORTLAND, OREGON Pacific Metal Company Phone: BRoadway 0695
COLUMBUS, OHIO Williams & Company, Inc. Phone: MAIn 3291	ST. LOUIS, MISSOURI Metal Goods Corporation Phone: GOOd fellow 1234
DALLAS, TEXAS Metal Goods Corporation Phone: DIXon 4-3925	SAN FRANCISCO, CALIFORNIA Pacific Metals Co., Ltd. Phones: MISSION 1104 and ENTERprise 10806
DETROIT, MICHIGAN Steel Sales Corporation Phone: TYler 6-3000	SYRACUSE, NEW YORK Whitehead Metal Products Co., Inc. Phone: SYracuse 5-4112
HOUSTON, TEXAS Metal Goods Corporation Phone: PREston 1181	TOLEDO, OHIO Williams & Company, Inc. Phone: ADams 8102
KANSAS CITY, NORTH, MISSOURI Metal Goods Corporation Phone: NORday 3516	TULSA, OKLAHOMA Metal Goods Corporation Phone: 4-1175

# ALCOA FIRST IN ALUMINUM

IN EVERY COMMERCIAL FORM





It stands to reason: your best chance of finding the right blade — the blade that'll cut down "rejects" and replacement cost — is offered by a complete line . . . the Star line. Your Star supplier can give you a wide choice. He has a Star blade for every job a hack saw or band saw can do. No matter what you're cutting — metals, plastics or other non-metallics — he can furnish you with the Star that'll cut it cleaner, faster, better — the right blade to cut costs for you.

**HAND BLADES**

**FRAMES**

**POWER BLADES**

**BAND SAWS**  
(Metal cutting, including Skip-tooth)

**FREE BOOKLET OF HACK SAW HINTS.** Specifications, tips on use, prices. Free from Star suppliers.

**METAL CUTTING**

**Star**

**TRADE MARK**

Sold only through recognized distributors

**CLEMSON**

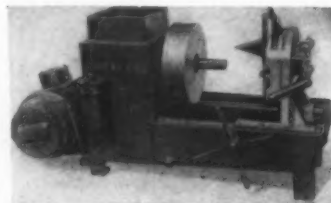
CLEMSON BROS., Inc., Middletown, N. Y.  
Makers of hand and power hack saw blades, frames, metal cutting band saw blades and the Clemson D-17 lawm machine

## IMPROVED CUTTING TOOL



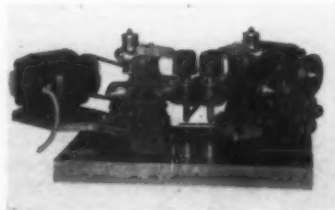
NEW model Carolus Type Cutter features drop forged handles to give added strength. Socket screws are substituted in the adjusting sections in place of protruding bolts. Counter-sunk eccentric head strap bolts maintain factory set tension on the head assembly, it is claimed. A 2-way cutting jaw provides both side and end cutting action. Cutting jaws are also available in 3-way combination incorporating a nut-splitter. Application of 100 lbs. pressure gives 4 tons cutting power at the jaws. The tool is designed to cut all metals up to the hardness of case hardened steel. *Manco Manufacturing Co., Bradley, Ill.*

## PIPE THREADING MACHINE



NEW pipe threading machine is adaptable to permanent installation or may be used as a portable unit. Known as the Thread King, it cut, reams, and threads pipe of 1/2" to 2" in diameter. Larger sizes up to 8" may be handled with a special drive shaft. Changing of pipe sizes is accomplished by a chuck with a selector dial. By turning the dial to the required pipe size, the one movable clamping jaw gives a positive grip, it is stated. For reaming, a movable reamer is used. Armstrong adjustable dies are provided. *Century Engineering Co., 5529 S. Vermont Ave., Los Angeles 37, Calif.*

## TWO-HEADED RIVETING HAMMER



BENCH-TYPE 2AHD riveting hammer with twin heads (capacity: 1/8"-5/32" diameter rivets) forms two rivet heads simultaneously and has a minimum center line distance of 2 3/4", maximum 12". Greater center line distances can be obtained, it is claimed. Clutch mechanisms are hydraulically operated. Units for greater capacity are available. *The High Speed Hammer Co., Inc., 318 Norton St., Rochester 5, N. Y.*

## DOUBLE ACTION HAMMER MILL



PRELIMINARY breaking combined with average finish grinding of food, chemical and industrial products made in large slabs gives this new Buffalo hammer mill its double action. Slabs are fed in through chute-type feed to a battery of revolving hammers which break the material in small sections. Pieces are pulverized against the breaker plate and carried over the grate bars for final sizing. A built-in trap protects against damage by metal or foreign material. The mill is of all-welded, steelplate construction. *Buffalo Hammer Mill, 27 Washington St., Buffalo 3, N. Y.*

(Please turn to page 174)

*What* **STRONGER** *Proof*

can you ask for as to the quality of the product, - the responsibility and the dependability of the firm, than the Century of Continual Activity of this Company in the manufacture of

**Bolts, Nuts, Screws and Rivets?**

They are obtainable through your Jobber and Mill Supply House.

Specify and demand by name (Clark).

**CLARK BROS BOLT CO.**

MILDALE CONN.



**LIGHT IN WEIGHT (15 oz.)**

**COOL IN OPERATION**

**COMPLETELY INSULATED for  
ADDITIONAL PROTECTION**

*Presenting*

**The NEW MODEL**



## ARMOR-CLAD ELECTRODE HOLDER

Copyright, 1947, General Electric Company

**H**ERE is the new, "1947 model" of the G-E armor-clad electrode holder, materially improved and redesigned with the operator's point of view in mind. Light in weight, fully insulated, and amazingly cool in operation, it is also small, compact, and easy to use—and so well balanced that operator fatigue is materially reduced.

The gripping insert of the electrode slot is molded of heat-resistant plastic, *steel re-inforced*, to assure a tight, durable gripping surface. Yet electrodes can be changed by a slight twist of the hand. And the "no-waste" slot permits electrodes to be melted down to a short stub end without gumming the holder with spatter.

The head of the holder is encased in a sheath of aluminum armor to protect the insulation. Spatter won't adhere to this aluminum sheath; the holder stays cleaner—lasts longer.

With all of its advantages, this new General Electric armor-clad holder costs no more than many ordinary types. Order one today (Catalog No. 279X17) and judge for yourself. Your G-E Arc-welding Distributor can supply you.

Most of the complete G-E welding accessory line, including helmets and handshields, spatter-resistant compounds, protective clothing, and tungsten electrodes, are described in the new Accessory Catalog, GEA-2704E. Write for your copy to Section 672-80, Apparatus Department, General Electric Company, Schenectady 5, N. Y.

**SOLDERED CABLE CONNECTION** assures good electrical contact, resulting in cool handle.

**HANDLE** is of molded fibre for strength, yet light in weight and comfortable to grip.

**PUSH-UP ROD** tightens electrode in firm "cushion grip" by slight twist of the hand. Insulated threads do not carry current.

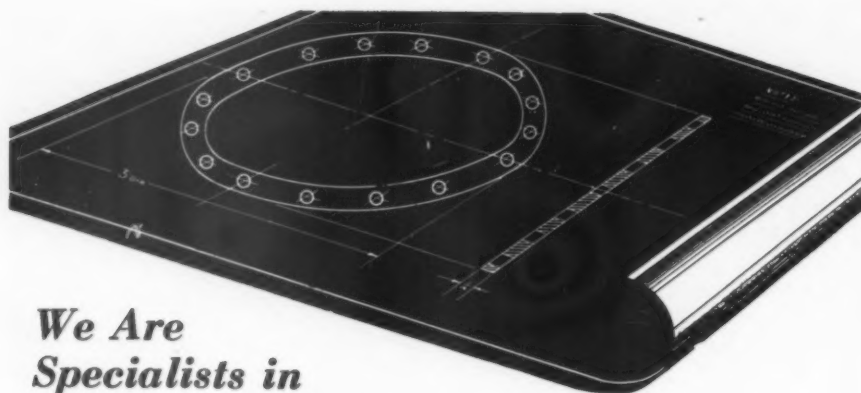
**ALUMINUM SHEATH** protects insulation, resists weld spatter.

**ELECTRODE SLOT** holds electrode firmly at proper angle, precludes long, wasteful stub ends.



**GENERAL  ELECTRIC**

672-80-R74H



**We Are  
Specialists in**  
DESIGNING & PRODUCING

## SPECIAL WASHERS and SMALL STAMPINGS

If you have a problem on Special Washers or Small Stampings, send it to us! More than a quarter-century of specialization has given us the "know how" to handle your requirements capably and economically. Perhaps we already

have the tools that are needed for your next job (we have more than 10,000 sets of tools on hand). If not, our experienced Tool & Die Department will be placed at your disposal. Send us your blueprints or specifications.

**THE MASTER PRODUCTS CO.**  
6400 PARK AVENUE • CLEVELAND 5, OHIO

## EWC WHEELS

### Engineered for YOUR Product

There is a wide variety of EWC wheels and axles for every type of mobile equipment... one or several may be ideally suited to your product. For unusual wheel problems, we offer you a complete engineering service, with a thoroughly experienced staff and unexcelled facilities. Write today for complete information.



**ELECTRIC WHEEL CO., Quincy, Illinois, Est. 1890**

## EWC

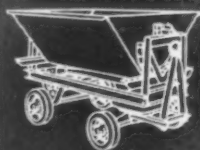
### Industrial Trailers



Model No. 1002  
Caster Trailer

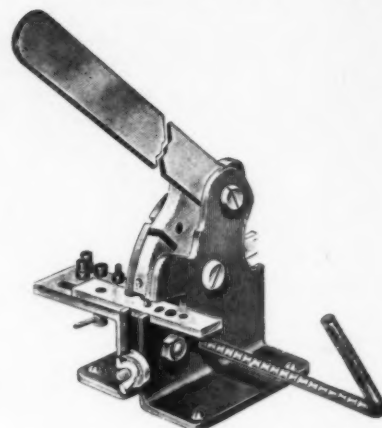


Model W-3  
3-Ton Capacity



Model WP-5  
5-Ton Dump Trailer

## FOUR-IN-ONE BENCH TOOL



SHEARING, punching, forming and riveting are performed by the No. 10 Bench Tool, manufactured by Ray Lewis Associates, Inc., Buffalo, N. Y. The tool is cadmium plated with dark blue enamel finish. All working parts are heat treated. Three interchangeable punches and two rivet sets are included with each tool. Punch sizes are 1/16", 1/8" and 3/16", and rivet sets provide for hollow rivets or eyelets. Overall height, 5", width 4", length 13". Literature available. General Sales Agent: John H. Graham & Co., Inc., Dept. BJ, 105 Duane St., New York 8, N. Y.

## NEW OIL SEAL



SYNTECH is the name of a new oil seal designed around a precision-molded, synthetic rubber sealing member, used on wide variety of applications ranging from earth movers to washing machines, high speed shafts driving radar antennas, truck axle pinions and diesel engine chain drive cases. They are said to provide zero leakage and a marked reduction in power loss due to oil seal drag, plus a remarkably long life.

They are manufactured in two principal types, namely the 150,000 series spring-loaded, metal encased, which are available in wide variety of sizes and design. They are recommended for shafts whose diameter is .875" and over, and are said to be virtually unaffected by proximity to water, acids, salines, hydrocarbons and most commercial solvents.

For shafts under .875", the 240,000 series is recommended. These are springless seals in which a molded, synthetic rubber sealing member is bonded to a metal backing washer. They are also available for use in larger shaft diameters where felts and springless leathers are usually used. Catalog available. National Motor Bearing Co., Inc., Redwood City, Calif.



**This truck is all tied up!**

A platform truck, gone to the second floor for loading. And here, by means of a light bulb attached to the worker's wrist, the camera shows what unloading involves... all the waste moves that must be made before the truck is free!



# New Light

## on an Old Problem!

Here's Joe with an old problem—a load to move and no truck to move it. The truck he wants is upstairs—loaded. And here, in this authentic camera study, you see what must be done before he gets it back... all the waste time and effort of unloading piece by piece, only to reload the same materials next time they're needed!

You can eliminate all this piling and unloading—and keep your trucks always ready for action! For with Barrett Lift-trucks and Skids, the Skid stays with the

load, keeps it as a unit, while one simple move sets the Lift-truck free!

In moving materials from room to room, floor to floor, or in and out of trucks, the Barrett System enables one man to do more than 3 or 4. Your Barrett engineer will gladly show you how—no cost or obligation.



**This truck is ready for action!**

It's a Barrett Lift-truck, leaving the elevator after depositing a loaded Skid. With one simple move, the Lift-truck rolls out for more action... while a second Lift-truck meets the up-going load!



Send for your free copy of the Barrett Junior Catalog... 147 pages, with a cost-saving tip on every page!

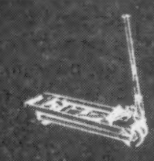
**BARRETT-CRAVENS COMPANY**  
3280 West 30th Street • Chicago 23, Illinois

Representatives in All Principal Cities  
Canadian Licensee: S. A. Armstrong, Ltd. • Toronto, Canada

# BARRETT

ONE MAN DOES MORE THAN 3 OR 4... WITH A BARRETT

**Barrett Handling Equipment**

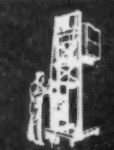


HAND LIFT-TRUCKS

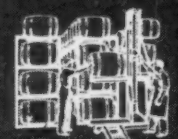
SKIDS

BARREL TRUCKS

NIFTY SYSTEMS


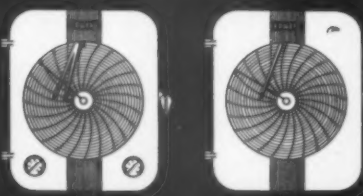
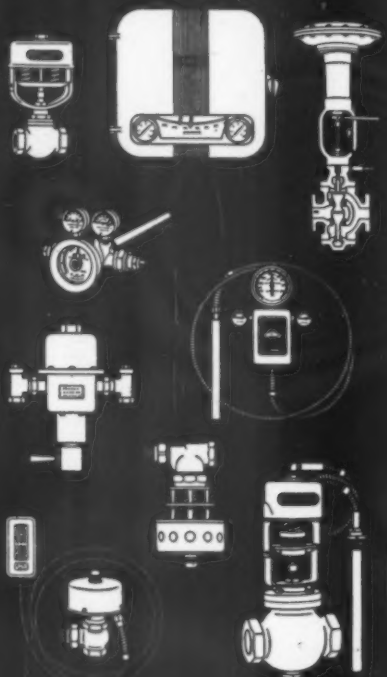


PORTABLE ELEVATORS



STEEL STORAGE RACKS



When you want accurate and dependable automatic temperature or humidity control for Industrial Processes, Heating or Air Conditioning Systems, call in a Powers engineer. With over 50 years of experience and a very complete line of self-operating and air operated controls we are well equipped to fill your requirements.

Write for Circular 2520  
2792 Greenview Ave., Chicago  
Offices in 47 Cities—See your phone directory.

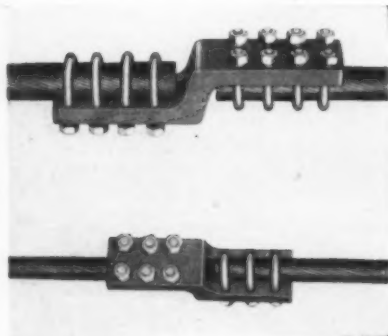
**THE POWERS REGULATOR CO.**

## HATCHET-TYPE SOLDERING IRON



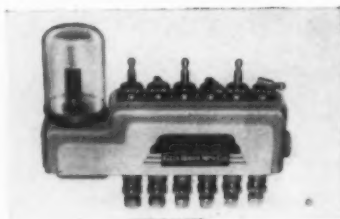
HATCHET-TYPE electric soldering iron is said to enable operator to reach inaccessible spots more easily. The heating element is housed in hexagonal barrel which can be clamped in vise for tip removal. Other features include: high-heat alloy core; 6 ft. 10,000 cycle heater cord, removable handle. Heating element is of nickel-chromium resistance wire, insulated with mica, tips are hard drawn copper. The tool is catalogued 300 H. Hexacon Electric Co., 117 West Clay Ave., Roselle Park, N. J.

## NEW FEEDER SPLICER



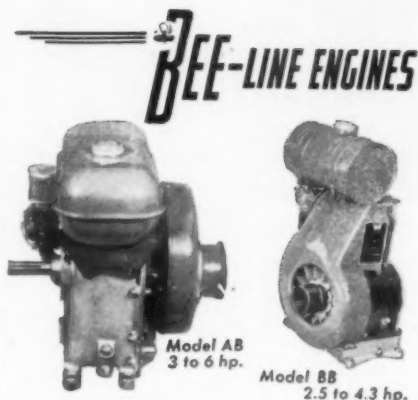
ELECTRICAL cables of various sizes can be spliced by the Type S Quick-Connecting Feeder Splicer, made in three sizes to handle 211,600 to 500,000 cm, 500,000 to 1,000,000 cm, and 1,000,000 to 1,500,000 cm, respectively. Each size will hold cables approximately 10% larger or smaller than sizes mentioned, it is said. Ends of cables are inserted in each end of the splicer and galvanized steel U-bolts hold them in place. Different sizes can be connected by one splicer if desired. Cast bronze body provides excellent conductivity. Mosebach Electric & Supply Co., 1115 Arlington Ave., Pittsburgh 3, Pa.

## NEW MULTIPLE OILER



MULTIPLE oiler is a centralized unit made up of a transparent reservoir of unbreakable plastics with a non-spill

(Please turn to page 178)



## In Volume Production

### Prompt Delivery

These 4-cycle, air-cooled gasoline engines are thoroughly service-proved in many applications. Light weight, compact design, and wide power range mean ready adaptability to many types of equipment and powering problems. Backed by 28 years of engine building experience, including manufacture of the famous Kinner aircraft engines.

**Gladden Products**  
CORP.

635 W. Colorado Blvd., Glendale 4, Calif.



**Large Diameter GEARS**

SPUR • BEVEL • MITRE • WORM  
WORM GEARS • RACKS  
Spur Gears to 145" dia.  
Bevel and Mitre Gears to 60" dia.  
Worm Gears to 72" dia.  
Any material  
Over 50 years' experience

**SIMONDS GEARS**

THE SIMONDS GEAR & MFG. CO.  
LIBERTY AT 25th  
PITTSBURGH 22, PA.

**GO TO AN  
ASBESTOS EXPERT**  
*When it's too hot  
to handle!*

Where there is need for asbestos safety clothing, it is needless to say the best is needed . . . And you're sure it's best when it's Palmetto Asbestos.

Greene, Tweed & Co., manufacturers of famous Palmetto Asbestos products, are pleased to announce that Palmetto Asbestos Safety Clothing is again available. To meet the demands for many new types of gloves, mittens, aprons, coats and other garments, the line of standard products is now far more comprehensive than that which existed before the war.



Illustrated above are a few representative products. For literature covering the entire line or particulars on special safety clothing, write Department S—Greene, Tweed & Co., North Wales, Pa.

# PALMETTO

*Palco*



NEVER SCORES FOR YOU

*So you win!*

If you've been experiencing scored pump sleeves in centrifugals handling cold water, you've got the wrong packing in your line-up. Put Palmetto Palco in the box to bat for your side . . . This self-lubricating long staple cotton packing always makes a hit with chief engineers, master mechanics and maintenance men *because it cannot score!* Write today for more particulars on this and other famous packings on the Palmetto team.



**GREENE, TWEED & CO.**  
**North Wales, Pennsylvania**

*In the United States and Canada There is a Distributor Near You*

**SEND THE  
COUPON**

*Today*



GREENE, TWEED & CO., North Wales, Pa.

P-347

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☐ Send a representative please

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**BEFORE**  
**DON'T THROW THEM AWAY**  
**AFTER**



**GLOVES COST YOU MONEY**

WE CLEAN, STERILIZE, RE-SHAPE, SORT, PAIR AND PACK IN BUNDLES OF 10 PAIRS. WE FURNISH LOCK-TOP, STEEL CONTAINERS FOR COLLECTION AND SHIPPING

**USE THEM OVER AND OVER AGAIN**

We are saving thousands and thousands of dollars a year for nationally known companies by reclaiming work gloves of all types; leather, cotton, asbestos, etc. **IT COSTS NOTHING TO FIND OUT. TRIAL ORDER FREE!**

**FREIGHT PAID WITHIN 300 MI.**

**CLEANERS AND PROCESSORS OF LEATHER, COTTON AND RUBBER GOODS**

**Wash-Rite Company**  
1412-26 CORNELL AVENUE · INDIANAPOLIS 2, INDIANA



**NEOPRENE HOOD IMPREGNATED**

**WORK GLOVES**  
... FOR **PLUS PROTECTION**

**PROTECTION** — Protects against abrasion, acids, alkalis, chemicals, corrosives, stains, salt-water, slime and irritants.

**DEXTERITY** — Special curvature designed to fit natural hand contours.

**LONG LIFE** — Vulcanized and reinforced for superior wear.

**COMFORT** — Lined with fleecy Canton cotton flannel. Hands stay clean, safe and dry.

**TWO TYPES** — Specify "Knitwrist" for hand protection; "Gauntlet" for hand and lower arm protection. Order Hood Work Gloves from your jobber — by dozen or case today. Since 1934 — America's SAFETY-PLUS Glove.

**HOOD**  
HOOD RUBBER CO., WATERTOWN, MASS.  
A Division of the B. F. Goodrich Company



**BEALL**  
Spring WASHERS

**Bolted assemblies stay TIGHT permanently**

BEALL SPRING WASHERS, with live, long-range action compensate for ALL causes of looseness including vibration, bolt stretch, wear, rust and break-down of finish under the nut and bolt head.

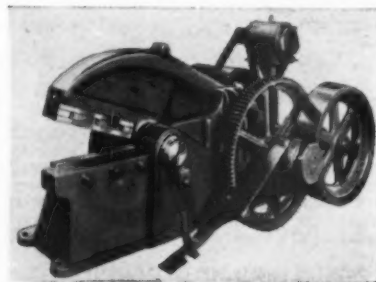
**IN STOCK** in all Standard Sizes; made of Carbon Steel, Stainless Steel, Everdur and Duronze.

**BEALL TOOL DIVISION**  
(HUBBARD & CO.)  
160 Shamrock St. EAST ALTON, ILL.

(Continued from page 176)

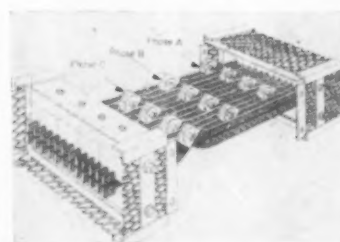
valve to simplify refilling, and a main reservoir from which copper tubes lead to remote oiling points. The main reservoir is fed from the plastic constant level reservoir and the oil maintained at an even level. Overflow and flooding of bearings are impossible, it is claimed. A series of valves, one for each lead permits the flow to each bearing to be adjusted individually, or turned completely on or off. The system may serve more than one machine, or complex units with independently working parts. *Gits Bros. Mfg. Co., 1846 S. Kilborn Ave., Chicago, Ill.*

#### NEW AUTOMATIC SHEARS



FULL automatic "Milwaukee" alligator shears can be used where accurate dimensional cutting is required, such as in forge shops, steel warehouse, or industrial plants. A foot operated clutch and brake mechanism permits the operator to feed the shear and adjust the cut as desired. If continuous operation is desired the foot treadle can be latched down. The shears are available in seven sizes and in a variety of styles. Catalog No. 678 available. *Doelger & Kirsten Corp., 3015 W. Chambers St., Milwaukee, Wisc.*

#### UNIVERSAL FEEDER BUS



DESIGNED for conducting long runs of large alternating currents, this new Universal feeder bus is said to have installation value where voltage drop must be minimized. Available in 800, 1000, 1350, 1600 and 2000 amp capacities, the ventilated feeder bus is being produced in these types: 2 pole-single phase, 3 pole-3 phase, and 3 phase-4 wire. Protected by steel mesh on all sides, the bus bars are interlaced, wrapped and insulated to assure the least possible temperature rise. The feeder bus can be mounted or suspended in the conventional way, or by means of connecting to insulator frame support bolts which are spaced every 20 inches. *National Electric Products Corp., Chamber of Commerce Building, Pittsburgh, Pa.*

(Please turn to page 180)



# Lighting Panels that make your eyes light up

BullDog lighting panelboards combine efficiency with visual appeal to make your eyes light up in appreciation of smart styling and progressive engineering.

## BULLDOG SUPERBA PANELBOARDS

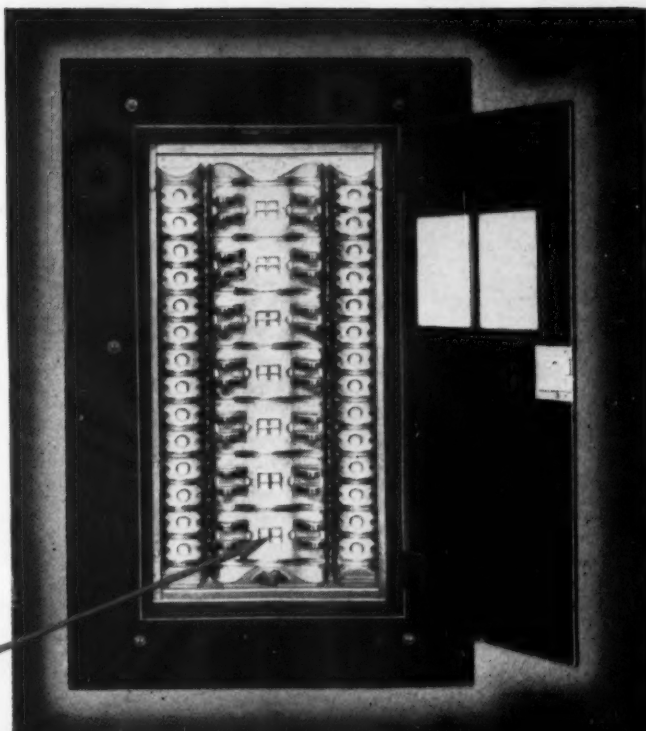
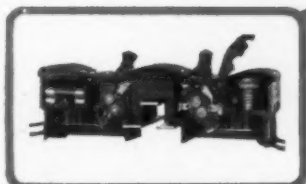
BullDog's SUPERBA Panelboards meet the combined need for beauty and utility in offices, stores and commercial buildings.

Standard SUPERBA features interlocked fuse doors to provide an added safety factor, since fuses are always "dead" when accessible.

Modified SUPERBA incorporates all advantages of the Standard Model, except that it is intended for installations where *electricians* will replace fuses and, for that reason, does not require interlocked fuse doors.

Both offer the exclusive OMNI-bus feature, permitting balancing of loads without removing the cabinet door or trim, or disturbing wiring connections. Heavy-duty toggle switches, with quick-make and quick-break action, minimize arcing and burning to insure longer life and lower maintenance costs. Cartridge fuse ejectors are integral in the design.

Cutaway view of Standard SUPERBA phenolic unit featuring OMNI-Bus bars, rugged toggle switches, cartridge fuse ejectors—all adding to the appearance and utility of this lighting panel line.



## BULLDOG ROCKER TYPE PANELBOARDS

With BullDog ROCKER-TYPE Panelboards, ruggedness comes first.

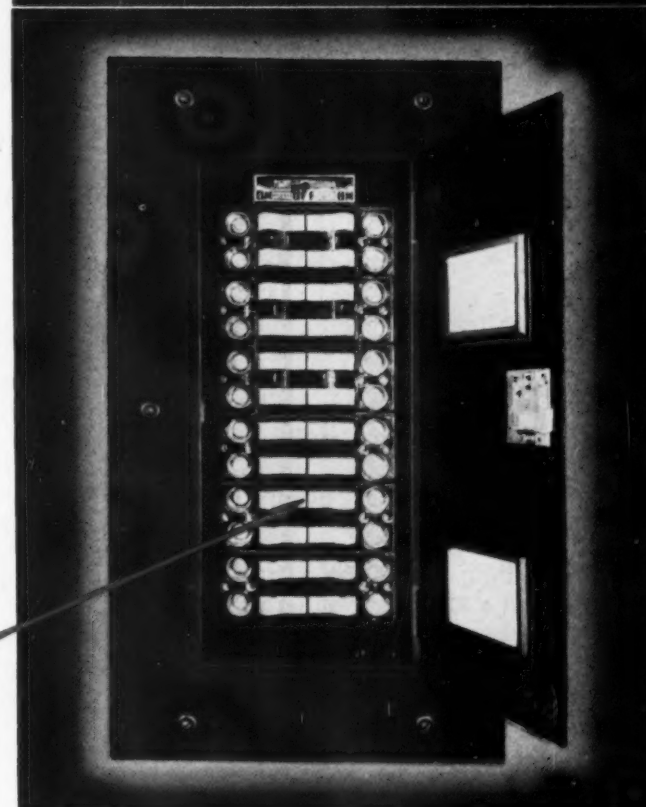
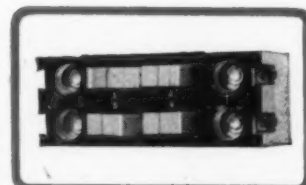
These panelboards are designed particularly for factory use, where appearance is secondary but where circuits are apt to remain under load "around the clock."

Branch circuit units are sturdily designed of porcelain—the best insulating material known to the electrical industry. Porcelain is arc-resisting, non-carbonizing and non-tracking.

Switches are designed to reduce handle breakage. Quick-make and quick-break action, and friction-free knife edge bearings cut maintenance costs.

For full information on BullDog SUPERBA or ROCKER-TYPE lighting panelboards, call your BullDog Field Engineer. Or, write BullDog direct for folders.

Cutaway view of ROCKER-TYPE porcelain unit designed for rugged durability, maximum dielectric strength and heat resistance plus simplified switch mechanism with unbreakable rocker handles.



**BULLDOG**  
ELECTRIC PRODUCTS COMPANY



BullDog manufactures Vacu-Break Safety Switches—SoftFuse Panelboards—Superba and Rocker Type Lighting Panels—Switchboards—Circuit Master Breakers—"Lo-X" Feeder BUStriction DUCT—"Plug-in" Type BUStriction DUCT—Universal Trol-E-Duct for flexible lighting—Industrial Trol-E-Duct for portable tools, cranes, hoists.

Detroit 32, Mich. Field Offices In All Principal Cities. In Canada: BullDog Electric Products of Canada, Ltd., Toronto.

# LEA METHOD COMPOUND

## A Finishing Assignment



The famous Speed Graphic Camera

Graflex, Inc., manufacturers of famous photographic equipment since 1890, have found in the proper LEA Method and LEA Compound the solution to a difficult finishing problem on the yoke of the famous Speed Graphic.

LEA's work at Graflex, Inc. is another example of the wide versatility enjoyed by LEA Methods and LEA Compounds. If you are burring, polishing or buffing metals, plastics or woods, you should consult a LEA Finishing Engineer. He may be able to assist you in cutting costs, cutting production time and in improving the quality of finish on your products.

# THE LEA MANUFACTURING CO.

16 CHERRY AVENUE • WATERBURY 86 • CONNECTICUT

### LIGHT-DUTY VIBRATION MOUNT



REXON light-duty vibration mounts, for isolating vibration in electronic and electrical equipment, are said to be capable of handling dead weight loads as low as 1/2 lb. per lineal inch of mounting strip. Special "X" design of the rubber element acts in shear at the points of the "X" under normal loading, but in compression when the load exceeds the rated capacity of the mount. Mounts are furnished in strips 12" long and may be cut up in multiples depending on the load to be supported. Drilled mounting lugs can be positioned to fit almost any type of mounting, manufacturer states. *Hamilton Kent Mfg. Co., Kent, O.*

### DIE CASTING MACHINE FOR ALUMINUM

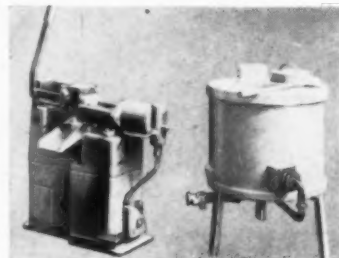


ILLUSTRATION shows new 3 oz. cold chamber pressure die casting machine for aluminum alloys and accompanying preheat furnace for pre-melting the aluminum. The machine is known as the ADC-56 and utilizes single cavity molds. It injects metal under high pressure with a pneumatically operated metal injection plunger. Booklet available. *DCMT Sales Corporation, 315 Broadway, New York 7, N. Y.*

### DOUBLE BELT BENCH GRINDER



MODEL DBS double belt bench grinder for working all types of metals, has a heavy duty drive shaft which mounts two 7" diameter by 2 1/2" wide

(Please turn to page 182)

# You Always Look at the Barrels Before You Buy



Why? Because you want gun-barrels that are structurally perfect tubes—with a superlatively fine finish—no scratch, pit or blemish inside and the satin smooth outside finish that usually bespeaks true craftsmanship in fire-arms.

Your requirements in steel tubes may be equally exacting—yet you wouldn't want to take the time to check the uniformity and quality of every tube

in a carload shipment. Because Globe specializes in tubing manufacture, our plant is equipped with every scientific means to control uniformity and quality at every stage of production—from raw steel billet to finished tube.

Get exactly what you want in tubes—from Globe—in seamless carbon, alloy, stainless steels or Globeiron high purity ingot iron tubing—or Gloweld welded stainless steel tubing.

Globe Steel Tubes Co., Milwaukee 4, Wisconsin



## GLOBE

### STEEL TUBES

Seamless Tubes—Carbon—Alloy—Stainless Steels—Welded  
Stainless Steel Tubing—Gloweld—High Purity Ingot Iron  
Seamless Tubes—Globeiron Mechanical Tubing—Pressure  
Tubing—Tubing for Corrosion and Heat Resisting Applications.





**HANDEE**

Reg. U.S. Pat. Off.

**TOOL OF  
1001 USES****JACK OF ALL TRADES  
AND MASTER OF PLENTY**

It's quick, it's deft, it's conveniently small, yet the Handee Tool packs a terrific wallop!

Handee is the original, single hand controlled, electrically driven tool — and it's the finest today. It can be used at the bench or carried right to the job. It reaches hard-to-get-at places on machinery, touches up perishable tools, grinds dies, chip breakers on broaches, removes burrs, etc. Runs at a cool 25,000 r.p.m. AC or DC. Weighs 12 oz.

Combined with its accessories and exclusive attachments, the Handee Tool performs more operations with greater accuracy than any other portable electric tool at any price.

**PRECISION ATTACHMENTS:** Fit Handee only. Offhand carving, routing, shaping is exact as to depth of cut, accuracy of line. Indispensable to pattern shop. Set of 6, postpaid, \$7.95.

**HANDEE KIT** — Strong, compact steel carrying case holds the Handee Tool and a complete assortment of accessories. Postpaid, \$27.50. Handee with 7 accessories only, \$20.50.

**GRINDS • DRILLS • CUTS • SAWS  
ROUTS • POLISHES • ENGRAVES  
CARVES • SANDS, ETC.**

**IMMEDIATE  
DELIVERY  
... ORDER NOW!**

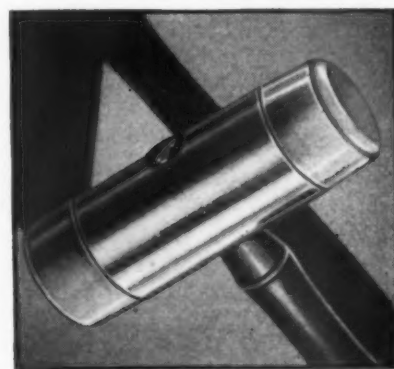
**CHICAGO ACCESSORIES FIT ANY POWER TOOL****THE MOST COMPLETE LINE AVAILABLE****OVER 500 — ALL FINEST QUALITY****THE RIGHT ONE FOR EVERY JOB!**

WRITE FOR 64-PAGE CATALOG

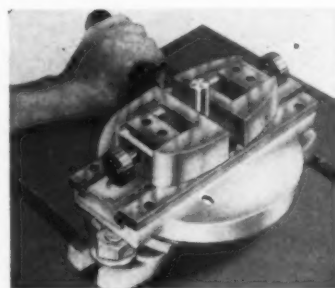
**CHICAGO WHEEL & MFG. CO.**1101 West Monroe Street,  
Dept. PG, Chicago 7, Illinois

(Continued from page 180)

resilient contact rolls, side by side and inches apart. Each roll is aligned with an idler adjustable for abrasive belt tension, tracking and lining up with the roll. This provides for the use of two endless metal cutting abrasive belts 2½" wide by 60" circumference. It has a 1 hp motor which gives the abrasive belt a cutting speed of 5200 surface fpm. The grinder may be used for burring gears, generating radii, weld grinding, removing flash, flat and edge work, and all types of clean up and polishing operations. *Porter Cable Machine Co., Syracuse, N. Y.*

**SOFT-IMPACT HAMMER**

NYLON soft-impact hammer will not chip, break, absorb moisture or change shape under hard use, according to the manufacturer. The nylon head absorbs impact and eliminates the possibility of personal injury by rebound force, it is claimed. An interlocking head construction prevents the replaceable head from becoming loosened in use. The hammer is available in three sizes: No. 664, 32 oz., for heavier work; No. 662, 20 oz., and No. 660, 10 oz., for more delicate work. *Herbrand Corp., Fremont, O.*

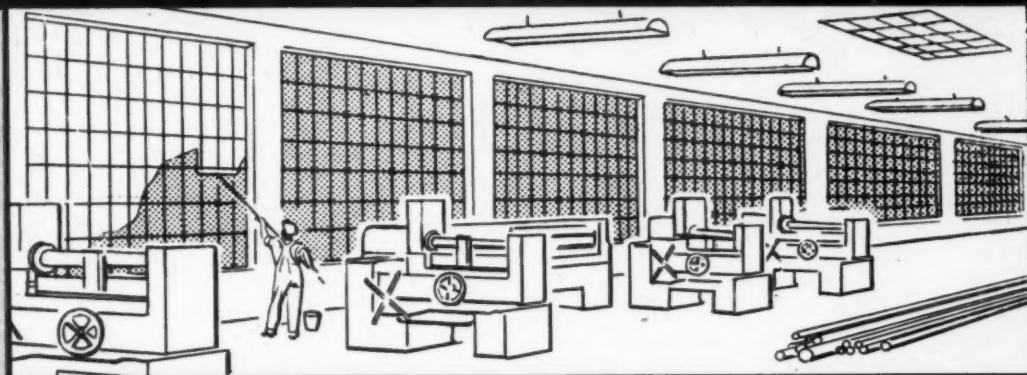
**DOUBLE CAM ACTUATED VISE**

SELF centering double cam actuated vise is said to center the work to the drill or cutter regardless of the dimensional variation of the piece. Maker states self centering feature is of advantage in the case of castings, forgings and similar types of unmachined blanks, and that one-hand operation and locking permits faster usage. There are no bearings to lubricate. Special jaws are available for irregular-shaped parts. *Williams Products Co., Middletown, Conn.*

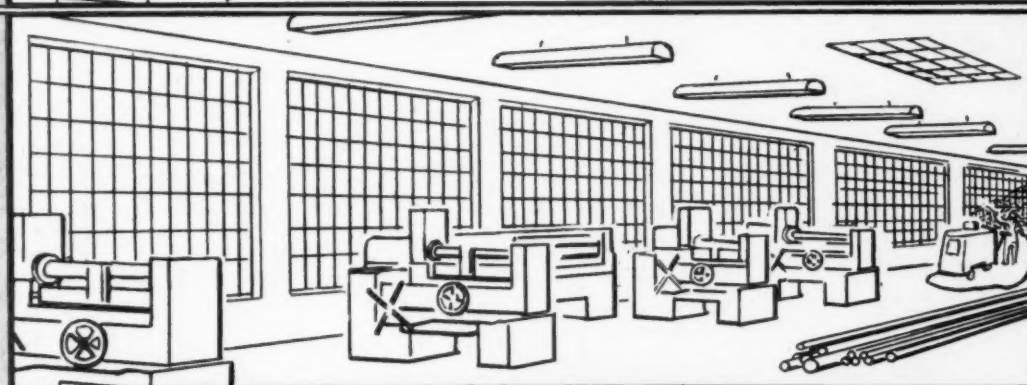
(Please turn to page 184)

You figure the savings in Dollars and Cents...  
 Here's what you save in Time  
**Cleaning Windows·Skylights·Walls·etc.**  
**WITH HYPRESSURE JENNY STEAM CLEANER**

**OLD WAY**  
**1 MAN**  
**10 HOURS**



**HYPRESSURE**  
**JENNY WAY**  
**1 MAN**  
**1 HOUR**



Your mill or factory ribbed-glass windows and skylights can be kept clean—sparklingly clean—to promote faster, safer operations, in just *one tenth* the time it now takes to clean them by hand. This means a saving of 90% on your cleaning bill; for 1 man with Hypressure Jenny can do more cleaning than 10 men working with mop, brush or broom. Add to this economy an additional saving of 40% in man hours when machines are Hypressure Jenny steam cleaned *before* repairs . . . the production time saved by getting machinery back into service faster . . . the many other time and labor saving cleaning jobs Hypressure Jenny will do . . . and you can understand why hundreds of users say Hypressure Jenny pays for itself many times over in the course of a year.

Let us send you full particulars. Write today.

**HYPRESSURE JENNY DIVISION**  
**HOMESTEAD VALVE MANUFACTURING CO.**  
**P. O. Box 93**                      **Coraopolis, Pa.**



. . . is portable . . . compact . . . safe . . . so easy to use that common labor can operate it. Cleaning is accomplished by a highly atomized mixture of steam, hot water and cleaning compound applied under pressure through an adjustable spray gun.



**IT'S A WISE  
OLD OWL**

**WHO KEEPS AN EYE ON  
WASHROOM EXPENSE**

• **STRAUBEL towels  
and tissues give you  
better value and service  
at lower upkeep costs!**



JUST A WEE BIT FOR  
THESE MORE AB-  
SORBENT PAPERS  
...AND TH' WASTE  
IS FAR LESS!

**A TRIPLE SERVICE!**  
DISTRIBUTED THROUGH  
PAPER MERCHANTS ONLY

Write for name of  
merchant best located  
to serve you.

**Straubel**  
TOWELS & TISSUE

STRAUBEL PAPER CO. • GREEN BAY • WIS.

#### PORTABLE MASONRY SAW



"CLIPPER" portable masonry saw cuts fire or acid brick. Straight, angle or "outlet" cuts can be made. By rapid cuts which automatically discharge cuttings and eliminate frictional heat, the blade is kept cool and blade life increased more than 50 per cent, it is claimed. Pressure equalizer, "teeter-proof" conveyor cart, adjustable head and lock pin adjustment are described as additional features. Clipper Manufacturing Co., 2800 Warwick, Kansas City 8, Mo.

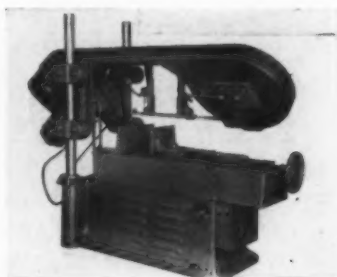
#### PNEUMATIC SCREW DRIVER



NEW power screw driver, available in two sizes, for driving small screws is pneumatically driven. Size 12A-1 has a free speed of 2,500 rpm and is designed for delicate screw driving operations. It drives

free-running machine screws up to Size No. 3 and very small self-tapping and wood screws. Size 12A-1C has a free speed of 10,000 rpm and accommodates screws on the No. 3 to No. 6 range. It is recommended for wood screws, self-tapping screws, and larger machine screws. It has no torque adjustment. Special feature of both models is pneumatic pick-up which enables operator to pick up screws with the air suction finder and drive them directly into the work. Weight of tool is 8 ounces; length 5½". Keller Tool Co., Grand Haven, Mich.

#### NEW METAL SAW



HEAVY-DUTY horizontal metal-cutting band saw, called Wells No. 12, features an automatic cutting cycle in

(Please turn to page 186)

**What type of  
STAINLESS  
FASTENER  
do you need?**



**Allmetal has it —  
or can make it!**

**Prompt delivery from the  
largest stock in the nation!**

Screws ... nuts ... washers ... pins ... Allmetal carries the largest stock in the country of stainless steel fasteners and screw machine parts. We also have facilities for heading, tapping, drilling, reaming, slotting, turning, stamping, broaching and centerless grinding ... and we work not only with stainless and monel, but also with duralumin, aluminum, brass, bronze, or any other non-corrosive metal. All parts produced to close tolerances. Write for our catalog today. Allmetal Screw Products Co., Inc., 33 Greene St., New York, 13.

**Send for  
FREE CATALOG**



This new, 83-page catalog helps you select the correct size and type of non-corrosive fastening device for any particular job. Includes stock sizes, specials that can be made, engineering data, etc. Make request on company letterhead.

Write to  
Department PG

**ALLMETAL  
SCREW PRODUCTS CO., INC.**

**33 Greene Street, New York 13**

**SPECIALISTS in  
STAINLESS FASTENERS**



# OIL SEALS *Engineered* TO THE REQUIREMENTS OF YOUR NEW PRODUCT

In serving industry over a period of years, sealing problems of all types have been encountered and solved. The many installations cover a wide range of shaft speeds, lubricant pressures, operating temperatures and the presence of grit, moisture or corrosive agents. Each problem has contributed to broadening the range of application of "Perfect" Oil Seals.



Today, the product designer having any given set of operating conditions can choose a "Perfect" Oil Seal which has been proved satisfactory under similar conditions and on which authentic service records can be cited.

Regardless of how much experimenting you may find necessary with other phases of your new product design, there need be none concerning the sealing of shafts. Ask Chicago Rawhide Engineers for their recommendations.

## CHICAGO RAWHIDE MANUFACTURING COMPANY

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PHILADELPHIA • CLEVELAND • NEW YORK • DETROIT • BOSTON • PITTSBURGH

60 Years Manufacturing Quality Mechanical Leather Goods Exclusively and Now Sevens Seal

# Here is the NEWEST CLARK FORK TRUCK...

## this improved CARLOADER

- lower overall height 83"
- higher lift 120"

*Plus* SUCH PRACTICAL  
ADVANCEMENTS AS

### PIVOTED STEERING AXLE

— MAXIMUM FLEXIBILITY FOR  
EVERY OPERATION OVER  
ROUGH SURFACES.

### IMPROVED HYDRAULIC

SYSTEM— VALVE MOUNTED  
DIRECTLY ON THE SUMP;  
NO PIPES OR FITTINGS.

### STRONGER FRAME—BOX

TYPE; 3-POINT MOUNTED—  
ASSURES STABILITY.

### ACCESSIBILITY—ALL VITAL

PARTS EASY TO REACH;  
COMPLETE HOOD REMOVAL.

### GREATER MANEUVERABILITY

— LONGER WHEEL BASE, YET  
NARROWER TURNING RADIUS.

The Clark Carloader  
changed industrial thinking  
about how to load and unload  
freight cars; it always was the  
champion of its class and  
still is.

Look to Clark Tructractor for  
continuous study of material  
handling—and for continued  
development of better methods  
for cutting handling costs.



## CLARK TRUCTRATOR

Division of CLARK EQUIPMENT COMPANY

BATTLE CREEK 23, MICHIGAN

OTHER PLANTS—BUCHANAN, JACKSON, BERRIEN SPRINGS, MICHIGAN

Please send literature on the new Clark "Carloader."

NAME \_\_\_\_\_  
FIRM NAME \_\_\_\_\_  
STREET & NUMBER \_\_\_\_\_  
CITY & STATE \_\_\_\_\_

(Continued from page 184)

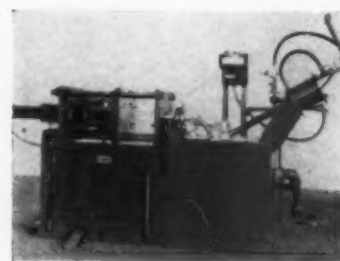
which the blade is fed into the work at a constant pressure and the cutting head is returned by hydraulic power to its starting position. The saw is designed for cutting off rectangular stock up to 12" deep by 16" wide or cylindrical stock up to 12 3/4" in diameter, and can be automatically controlled to cut any desired depth for work on dies or other parts. Cutting speeds are 50, 90, or 150 ft. per minute. A 3/4 hp motor drives the blade, and a 1/3 hp motor the hydraulic pump. Overall dimensions are 59" high x 78" long x 32" wide. Wells Manufacturing Corp., Three Rivers, Mich.

### ABRASIVE STICKS



FLEXIBLE rubber-bonded abrasive sticks can be cut and shaped to suit a particular use, according to manufacturer. They are made in three grains—fine, medium and coarse—and three lengths—3", 6" and 8". Shapes include rectangular, square, triangular and rounds, sizes ranging from 1/4" diam. round shape to 8" x 1" x 1/2" in rectangular sticks. Blocks, 4" x 4" x 3/4", are available for large area finishing operations. Sandusky Abrasive Wheel Co., 764 W. Ransom St., Kalamazoo, Mich.

### PACKAGED DIE CASTING MACHINE



SELF-CONTAINED "Hot Shot" die casting machine for intermittent die casting production work measures 22" x 72" and 40" high. Manufacturer states that no special maintenance crew for adjustment or maintenance and no specially trained die-casting technician for operating it are needed. The machine features single hook-ups for air, gas and 110 volt electrical equipment. It is furnished with blow torches for heating goose-neck and nozzle. The holding pot has a capacity of 300 lbs. of zinc alloy. Distributed by Ermac Co., 1426 South Santa Fe Ave., Los Angeles 21, Calif.

(Please turn to page 188)

**Sheffield quality assures  
low cost**  
*Gage Performance*



the **Sheffield** corporation

Dayton 1, Ohio

U. S. A.

{ Standard Gages  
Shipped in 24 Hours }





# CAN YOU GUESS THE ANSWERS?



## What MESSENGER NEVER CARRIES MESSAGES?

This "messenger" is the strong steel strand that supports telephone cable. Only the cable carries messages—as many as 1400 at once. Stainless steel messenger strand is a product of ACCO's PageSteel and Wire Division.

## Which DOES MORE WORK—ENGINE OR BRAKES?

Brakes. Where it takes 80 horsepower to accelerate to 20 miles per hour—350 horsepower is required to make a safe stop. ACCO's Automotive and Aircraft Division makes TRU-STOPS—the safer emergency brakes for buses & trucks.



## What

## DOES IT COST TO DRILL AN OIL WELL?

Average cost of drilling an oil well in 1945 was about \$70,000. Tru-Lay Preformed wire rope—made by ACCO's American Cable Division—helps drill hundreds of oil wells.



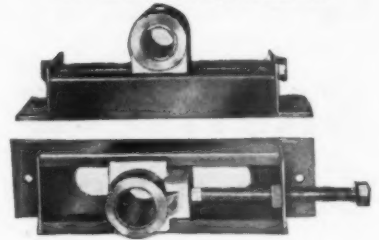
ACCO Products Include: AMERICAN Chain • TRU-LAY and LAY-SET Preformed Wire Rope • TRU-LAY Cable and TRU-LOC Swaged Terminals for Aircraft • PAGE Wire, Chain Link Fence and Welding Rods • CAMPBELL Abrasive Cutters • READING-PRATT & CADDY Valves and Fittings • PENNSYLVANIA Lawn Mowers • MARYLAND Bolts & Nuts • "ROCKWELL" Hardness Testers • WRIGHT and FORD Hoists • HELICOID Pressure Gages • MANLEY Automotive Service Equipment • OWEN Silent Springs.

**ACCO**



**AMERICAN CHAIN & CABLE** BRIDGEPORT CONNECTICUT

## BELT CONVEYOR TAKE-UP



NEW belt-conveyor take-up, built with a pressed steel frame, has a corrosion-acid-resistant bearing housing fabricated from a specially heat treated aluminum alloy said to combine light weight and strength. The bearing (sealed type), equipped with a porous bronze leadalloy bushing, is self-lubricating. Sizes range from 15/16" up to 1 5/16" in two types classified "A" and "B". Take-up travel is 6". Patron Transmission Co., Dept. 103, 129 Grand St., New York 13, N. Y.

## COMBINATION VALVE AND GAUGE



NEW combination reducing regulating valve and pressure gauge is made in 1/4", 3/8", 1/2" and 3/4" pipe size connections. The valve reduces the line or primary pressures to a desired lower working pressure,

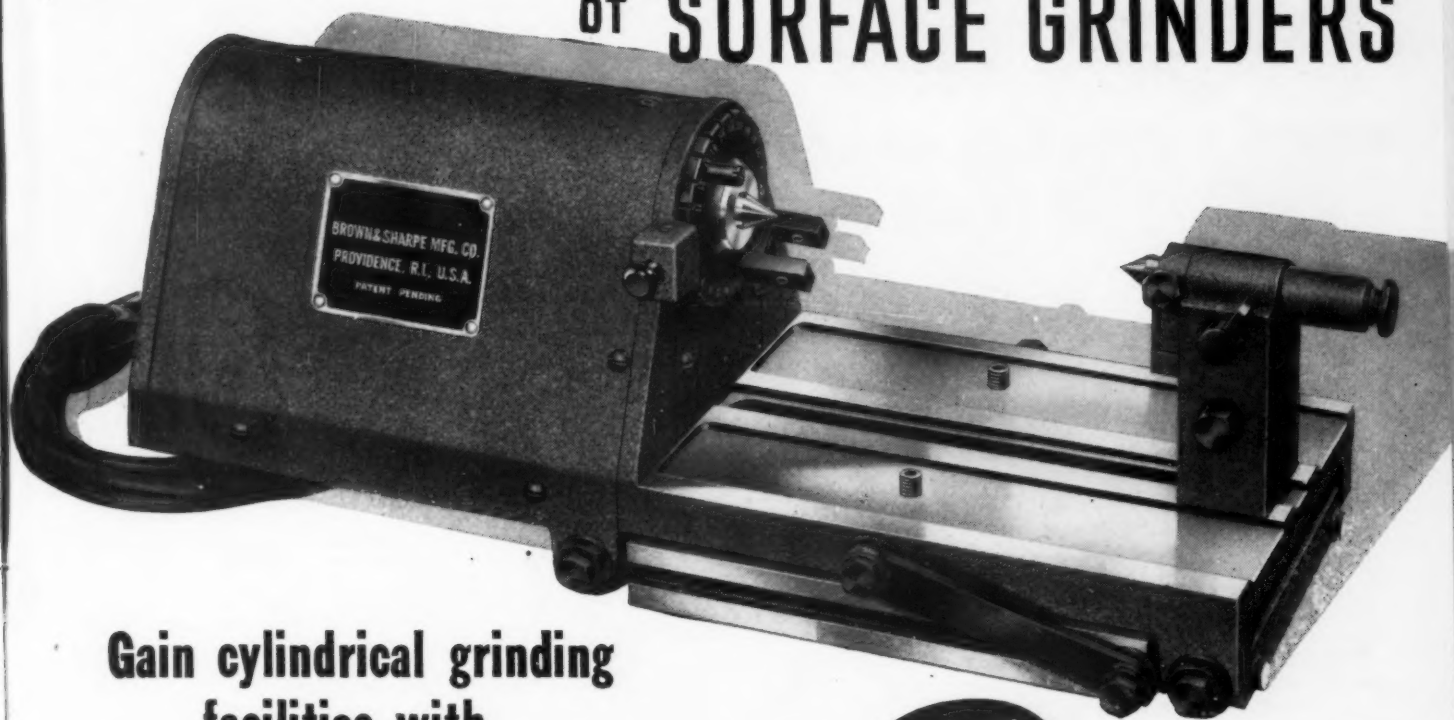
automatically maintaining pressures required on pneumatic tools used off the shop air line. The pressure gauge records the amount of air pressure used on the tools or apparatus. Pressure is controlled by the regulating valve. Each unit has two rubber shock absorbing vibration dampers for protection. The unit can be used on all shop air lines for regulating air pressures from 5 to 150 psi. Dayton Rogers Manufacturing Co., Minneapolis, Minn.

## SMALL POWER ROLLER



PONY-SIZE power roller is almost entirely of all-welded steel construction. The machine weighs approximately a ton, has a 3.5 ft. wheelbase, 42" body width and a 6 hp gasoline motor. Weight may be increased by adding 600 lb. concrete block in machine bed. Each roller section is water tight and can be filled through an inlet in the side wall. The main chassis consists of 1/4" x 5" plate with 3" channel ribs welded at intervals across the width. Steel Equipment Co., 2890 E. 83rd St., Cleveland 1, O.

# *Now*-MULTIPLY the UTILITY of SURFACE GRINDERS



## Gain cylindrical grinding facilities with NEW No. 616 ATTACHMENT

*...We urge  
buying through  
the Distributor*

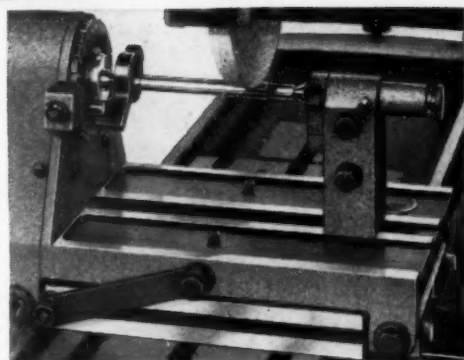
● For dry grinding small cylindrical work, tapers and work requiring indexing, the new Brown & Sharpe Cylindrical Grinding and Indexing Attachment extends the usefulness of surface grinders. It saves time and expense and often makes unnecessary the installation of extra cylindrical grinding equipment.

Straight cylindrical or tapered work is ground between centers or if  $\frac{1}{2}$ " diameter or less, can be held in the indexing spring chuck. In-

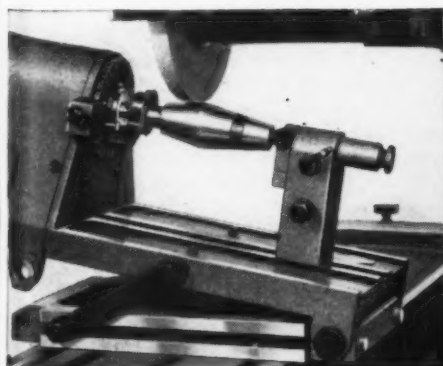
dexing is performed with headstock index plate or with interchangeable indexing spring chuck.

Centers swing 6" diameter, take work  $5\frac{1}{4}$ " in length. Maximum grinding angle,  $45^\circ$ . 1/60 H.P., 115 V., A. C. motor is completely enclosed. Write for illustrated folder about the new time-and-money saving No. 616 Cylindrical Grinding and Indexing Attachment. Brown & Sharpe Mfg. Co., Providence 1, R. I., U. S. A.

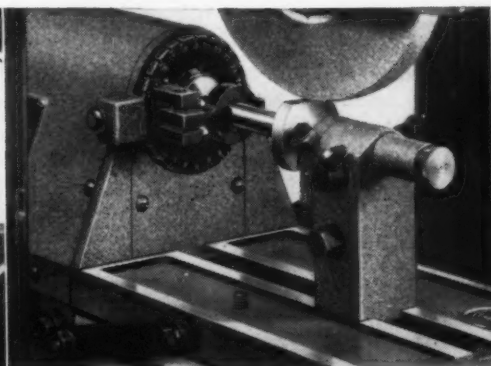
*Visit our Booth No. 505 at the Machine Tool Show*



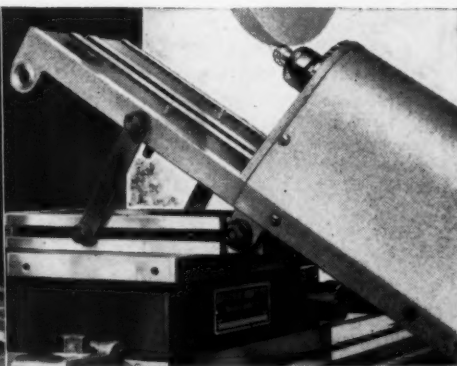
● Grinding work held between centers. Tailstock center is withdrawn for work change by simple swing of lever.



● Grinding taper shank. Attachment is adjustable to the desired taper.



● Grinding parallel flats using index plate. Index plate has 24 slots and is locked or released by plunger.



● Angular grinding of work held in spring collet. Attachment is held on permanent magnet chuck.

# BROWN & SHARPE





**I FOUND**  
**50% more**  
**STORAGE SPACE**  
**UP THERE . . . .**  
***all free!***



"We needed additional warehousing space—badly. First, we thought of adding a new wing. But the Crescent Electric PALLETIER gave us all the space we needed at far less cost. Vertical space—never before used. Now, tier after tier of our palletized materials are stacked to ceiling height."

The power-packed PALLETIER maneuvers easily in close quarters, climbs ramps, steps up loading and unloading. Just one man lifts, hauls, stacks—speedily, safely. Available in 1,000, 2,000, 3,000, 4,000 and 6,000 pound capacities. Write for free bulletins today.

**CRESCENT TRUCK COMPANY**  
 1165 Willow Street Lebanon, Pa.

*Industrial Truck and Tractor Specialists Since 1917*

### ONLY Crescent HAS ALL 5

- Full Magnetic Contactor Control protects against forced acceleration—extends life of motor and tires.
- Complete Stability with load fully elevated and tilted forward.
- Battery Power eliminates fumes and fire hazard.
- Full Accessibility to all mechanisms for easy inspection and maintenance.
- Maximum Visibility — operator spots and tiers without stirring from seat.



**Crescent**  
**ELECTRIC**  
**PALLETIER**

REG. U. S. PAT. OFF.

### FLOOR LEVEL LIGHTING AVERAGES 45-FOOTCANDLES

This new lighting system, bringing the brightness of day indoors, was recently completed in one of the big manufacturing aisles of the Westinghouse Electric Corporation's East Pittsburgh, Pa., plant. Installed after more than two years of experiments with various lighting systems, a battery of 213-1000 watt mercury vapor lamps and 142-1500 watt incandescent lamps mounted in alumi-



**Floor Level Lighting**  
**Averages 45-footcandles**

num reflectors, makes this aisle one of the best lighted industrial areas in the world. The incandescent lamps were interspersed with the mercury lamps to provide color correction as the latter give a cool bluish-white light. The results are cool color, clear visibility of details and an average of 45-footcandles of light near floor level.

1 1 1

### NEW-TYPE ENGINES DESCRIBED AT SAE MEETING

Development of unconventional types of engines—one consuming little fuel, the other producing tremendous power at slow speeds—was reported before the recent meeting of the Society of Automotive Engineers.

A fuel-injection engine with spark ignition and a compression ratio of between seven and ten to one, was described by Allan M. Starr, of Starr & Sweetland, Piedmont, Calif., as operating economically on a wide variety of fuels, starting easily, and weighing little. Mr. Starr said this engine propels a 3400-pound vehicle 35 to 45 miles on one gallon of fuel at 40 miles an hour.

#### Operating By Load

The engine was described as having intake and exhaust valve heads flush with the cylinder head and close to the piston. Adjacent is a cone-shaped combustion chamber, comprising the compression space, into which a nozzle injects fuel. The fuel mixes with a residual charge and the combination is fired by a spark plug. When the engine operates on light loads, fuel and spark automatically cut out and only half the four or six cylinders function.

Mr. Starr said that test engines are built satisfactorily from standard production cylinder blocks, pistons, and bearings used in normal gasoline engines. He characterized the new engine as having the flexibility of a gasoline power-

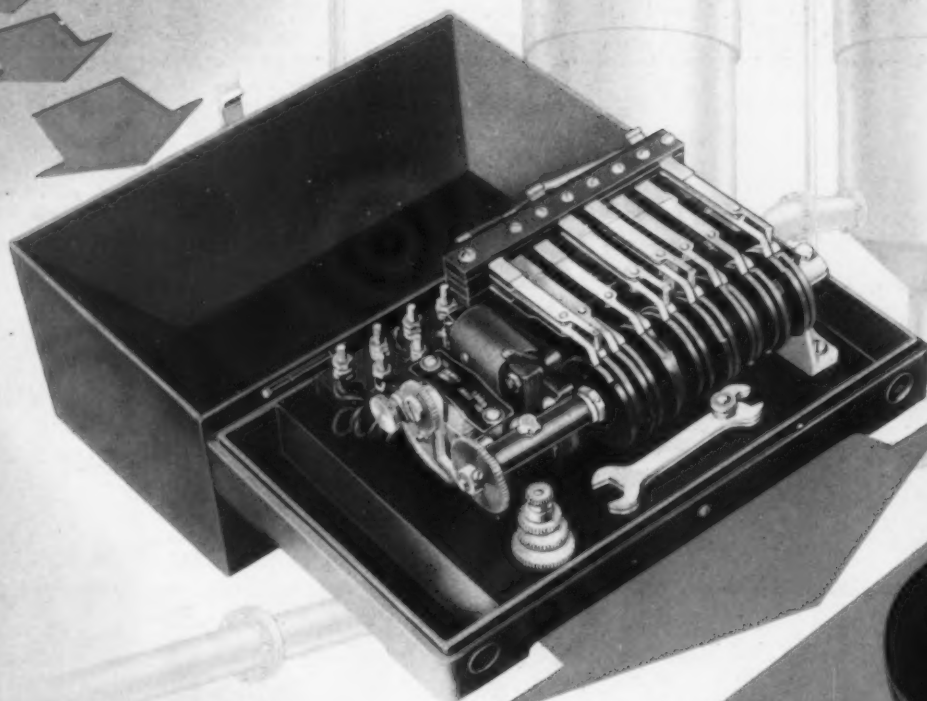
(Please turn to page 194)



**Plastics where plastics belong using insulating and mechanical qualities**

Synthane, a phenolic plastic, has a rare combination of mechanical, chemical, and electrical properties that fit it for a host of useful applications. It is corrosion and moisture resistant, dense, structurally strong and may be easily worked. An excellent electrical insulator, Synthane is extremely light (about one-half the weight of aluminum).

An example of the use of technical plastics is this timing device which uses Synthane for its cams.



The Cam Timer (above) is the heart of an automatic system designed to control the flow of exhaust gases through a stack in a lampblack plant.

The timing cams are made of Synthane because Synthane is, first of all, an effective electric insulator. Synthane cams operate noiselessly, virtually without friction, and calibrations are easily printed on them by the Synthographic process.

If there's a use in your plant for Synthane, why not let us help you before you design? Write for our complete catalog of Synthane plastics today! Synthane Corporation, 7 River Road, Oaks, Pa.

**SYNTHANE**



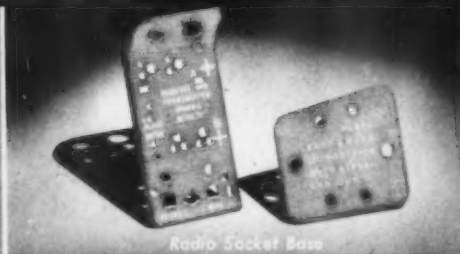
where Synthane belongs

DESIGN - MATERIALS - FABRICATION - SHEETS - RODS - TUBES  
FABRICATED PARTS - MOLDED - MACERATED - MOLDED-LAMINATED

# What'll You Have!



Dielectric? Synthane is an excellent electrical insulator. Dielectric strength is high, power factor and dielectric constant low. What makes Synthane the useful dielectric it is, is its strength and the comparative ease with which it can be punched or machined into the variety of parts needed on radio and electrical equipment.



Radio Socket Base



Strength? Synthane seldom is asked to compete with metals and alloys in strength. It is exceptionally strong for its weight and will compare favorably with metals for strength on a weight basis. Synthane is a member of that family of plastics highest in tensile, compressive, flexural and impact strengths.



Coupling Cross



Light Weight? One of the most important properties of Synthane is its light weight. Although Synthane weighs only  $\frac{1}{2}$  as much as aluminum its strength is ample for electrical applications and sufficient for most mechanical uses. Light weight plus other virtues accounts for its wide use in aviation.



Vee Belt Pulley



Anti-friction? Two grades of Synthane laminated have anti-friction and anti-wear characteristics built in, due to the incorporation of a special graphite. Available in sheets, rods, tubes and in special shapes and fabricated parts. Possibilities for this material are worth investigating.



Self Lubricating Roller



Corrosion Resistance? Perhaps you can take advantage of Synthane's immunity to most oils and solvents, Synthane's resistance to various concentrations of acids and salts. Often used because it has longer life per dollar than other materials, including cost of replacement.



Plating Tank Parts



Combination? Are you looking for two, three, four or even more properties combined in one material? Synthane may do the trick. It has all of the advantages above plus hardness, abrasion resistance, stability under temperature or moisture conditions, ease of machining, and many others.



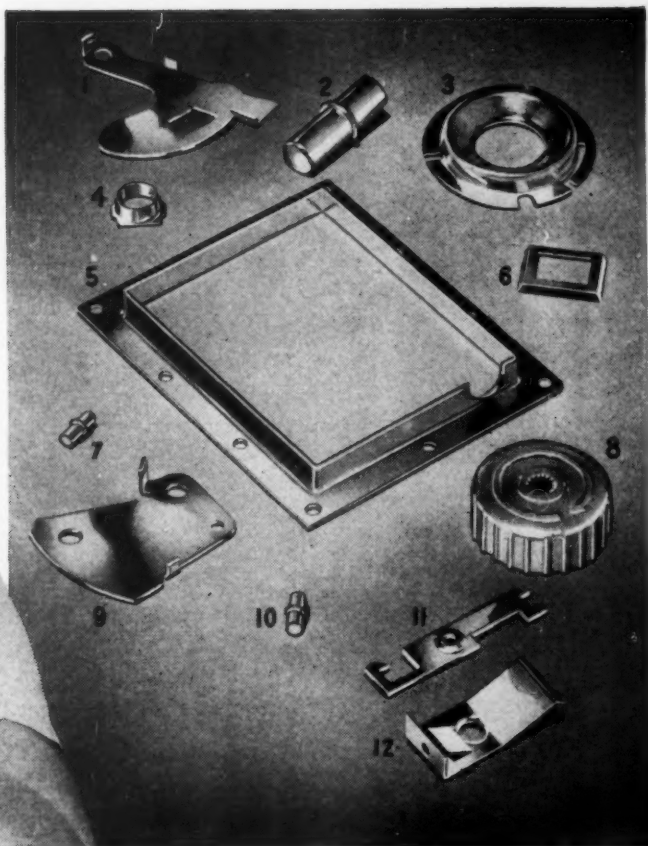
Motor Gear

**SYNTHANE CORPORATION, OAKS, PENNA.**

*Representatives in all principal cities*

Plan your present and future products with Synthane Technical Plastics • Sheets  
Rods • Tubes • Fabricated Parts • Molded-laminated • Molded-macerated

**SYNTHANE**  
S



**STYLE, LIGHTWEIGHT**

*plus Precision*

**in the new Whitehouse BEACON Camera**

CAMERA ENTHUSIASTS, young and old alike, always expect a lot for a little... so Whitehouse Products, Incorporated, decided that its new Beacon Camera not only should be handsomely styled and light in weight, but also must be made to a high standard of mechanical precision.

The stamped and drawn metal parts used in the camera are shown above. Made in large quantities, to unusually close tolerances in multiple-die production, these parts serve to illustrate our ability to supply precision made stampings and press drawn items in copper, brass, nickel silver and other metals, to exacting requirements and specifications.

Complete engineering services and toolmaking facilities are available, plus the additional advan-

- |                           |                      |
|---------------------------|----------------------|
| 1—Shutter Exposure Leaf   | 7—Back Catch Stud    |
| 2—Release Button          | 8—Winding Knob       |
| 3—Lens Ferrule            | 9—Shutter Cover Leaf |
| 4—Push Button Bracket     |                      |
| 5—Front Frame             | 10—Back Catch Stud   |
| 6—Front Finder Lens Frame | 11—Back Catch        |
|                           | 12—Side Lock         |

tage of production economies acquired through more than a century of manufacturing experience.

Your inquiry, accompanied by a sample, sketch or description of the part required, together with other pertinent information, will receive our prompt attention. Address your inquiry to: 47427



**WATERBURY BRASS GOODS BRANCH**

**THE AMERICAN BRASS COMPANY**

Waterbury 88, Conn.

DEEP DRAWN SHELLS, CUPS, BLANKS, STAMPINGS, EYELETS, FERRULES, GROMMETS, FASTENERS





## Completely Cold Forged QUALITY

Holo-Krome Fibro Forged Socket Screws are made by an exclusive Holo-Krome patented method whereby the Head and Body, in fact, all portions of the screw (threads excepted) are Completely Cold Forged. Fibro Forged Screws inherently have the completely continuous fibrous structure that results in increased strength. Specify "Holo-Krome" for Guaranteed Unfailing Performance.

Your Holo-Krome Distributor Is Ready To Serve You From His Warehouse Stock.

The unretouched etched cut-away view of a Holo-Krome Socket Head Cap Screw . . . Notice the CONTINUOUS FIBRES.



THE HOLO-KROME SCREW CORP., HARTFORD 10, CONN., U. S. A.

# HOLO-KROME

*fibro forged* **SOCKET SCREWS**

(Continued from page 190)

plant and the economy of a diesel, adding that differences in fuel knock rating, ignition rating, and volatility appear to have little effect upon performance.

### "Slant Engine" Described

Development of a "slant engine" of the "barrel" type, with opposed pistons in horizontal cylinders parallel to the main shaft and employing the diesel cycle to transmit power to two "slant plates" instead of a crankshaft, was reported by T. L. Sherman, of The Steel Products Engineering Co., Springfield, Ohio. Mr. Sherman said this compact, light engine will serve power-production needs in the 2,500 to 10,000 horsepower range lying between internal-combustion and steam engines.

It was reported that a nine-cylinder "slant engine" 43 inches in diameter and 70 inches long produces 1000 horsepower at 1200 revolutions per minute with remarkably low fuel consumption. Outstanding constructional feature was said to be the use of pivoted "slipper pads" which transmit to two rotating "slant plates" the thrusts of the 18 pistons.

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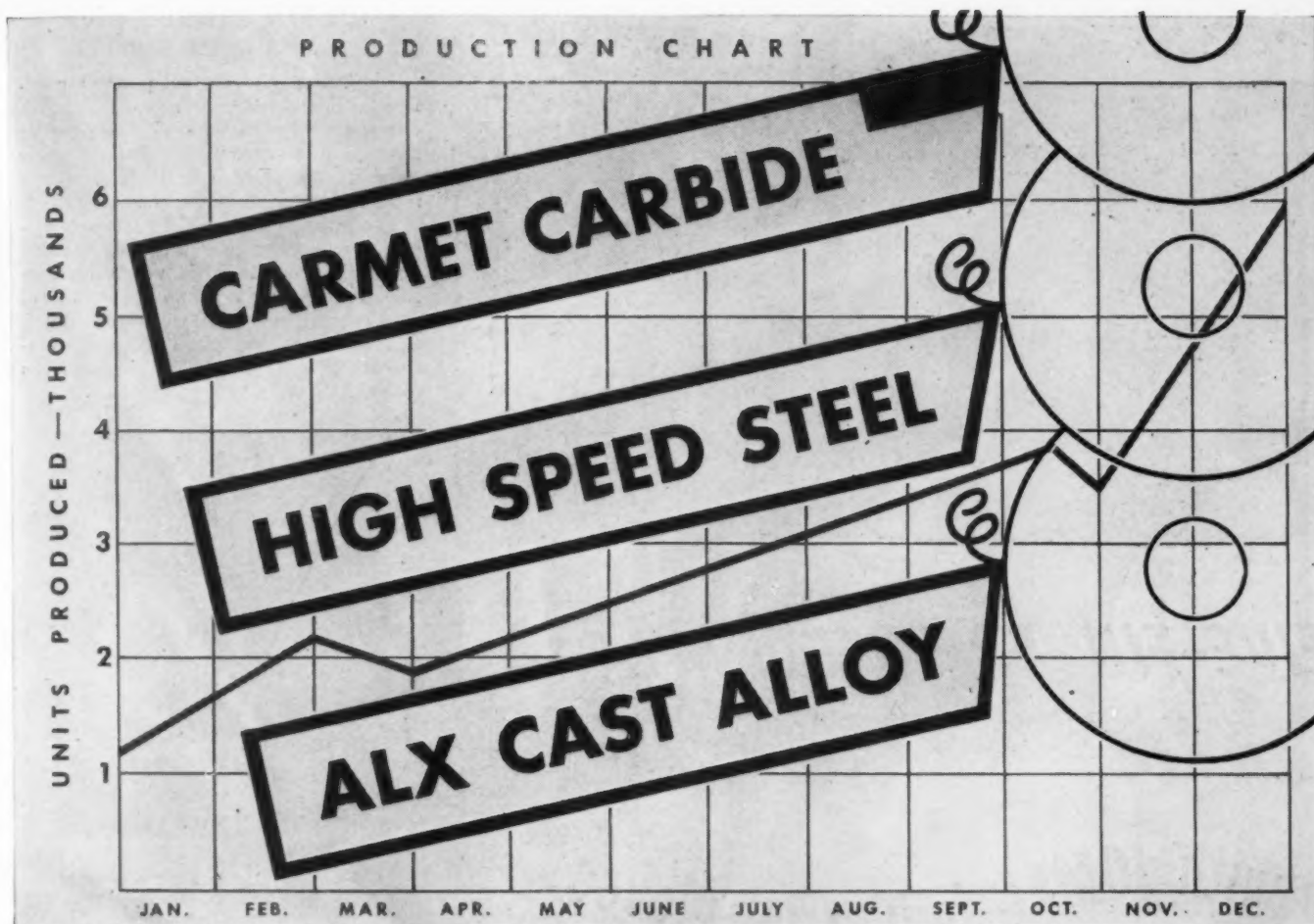
### QUALITY REPORT MINIMIZES INSPECTION SAMPLING

The Hunter Pressed Steel Company, Lansdale, Pa., springs manufacturers, has inaugurated a "QR" or Quality Report service to customers who want it, the report being furnished after final inspection, usually reaching a customer in advance of the shipment to which it is related by a report number.

Hunter Company's Quality Report

The report is a copy of the final sampling Quality Report made by Hunter inspectors. It is in the form of a frequency distribution of the test load values and consequently presents the information in an easily understood form. According to Hunter, customers have been able to reduce their own sampling to a minimum—sufficient to verify the frequency distribution pattern received from Hunter, and the report also minimizes inspection sampling by both vendor and customer.

(Please turn to page 196)



*Which* **CUTTING TOOL MATERIAL**  
**WILL DO** *Each* **OF YOUR JOBS** *Best?*

Allegheny Ludlum offers you—from one source—a choice of every type of cutting material . . . each in a wide and complete range of grades and sizes. That means a better opportunity for you to pick the tools *best* suited to each of your production jobs—with resultant savings in production time and costs. There's real value for you in one source for all your cutting tool requirements, plus a competent Mill Service Staff to assist your selection.

• Write today—on your company letterhead, please—for our new, full-color booklet on "Cutting Tool Materials." You'll find it a big help in your production plans.



SEND  
FOR  
THIS  
NEW  
BOOK

ADDRESS DEPT. P-56

**ALLEGHENY  
LUDLUM**

STEEL CORPORATION • Pittsburgh, Pa.



*Fine Tool Steels  
Since 1854*



## FIVE-FINGER FREEDOM...

## with JOMAC industrial gloves!

**FIVE-FINGER FREEDOM . . .** the kind that gives you a sure, firm grip . . . plus *longer-wearing* protection . . . is built into every JOMAC Industrial Glove! No more fumbling . . . no more dropping heavy objects for lack of a firm grip. With JOMAC, you've got finger-tip control, as flexible as the hand itself.

And there is scientific reason for JOMAC's longer-wearing qualities . . . for its *better*, never-failing protection. JOMAC's extraordinary fabric is thick with hundreds of protective "cushions" . . . air-cells held in place by a hidden lock-stitch . . . giving up to *7 times* the wear of ordinary work-gloves!

JOMAC Industrial Gloves . . . built for longer wear *and* better protection . . . will work hand-in-hand with you toward increased production and lower operating-costs. Get the full story today. Write C. Walker Jones Co., 6130 N. Lambert St., Philadelphia 38, Pa. Plants in Philadelphia, Pa.; Warsaw, Ind.; Detroit, Mich. *Foreign Representatives:* Gillespie & Co. of New York, Inc., 96 Wall Street, New York 5, N. Y.

"SHAKE HANDS WITH SAFETY"

# JOMAC INDUSTRIAL GLOVES

THREE TYPES OF JOMAC GLOVES

REGULAR INDUSTRIAL TYPE • HEAT- AND FLAME-RESISTING  
SAFETY GAUNTLET-CUFFS

### PORTABLE GASOLINE PUMP AND METER UNIT

\* Illustration shows small portable gasoline pump and meter units, each of which has the power to pump 100 gallons of gasoline a minute, designed for use by aircraft operators, contractors, heavy machinery users, and others.

The heart of the unit is a compact air-cooled engine built by Salsbury Motors, Inc., of Pomona, Calif., which packs a solid six horsepower into 56 pounds of weight and one and one-eighth cubic foot of space. Engine safety features include a high-efficiency air cleaner and an external, detachable-type magneto.



Power to pump 100 gallons of gasoline a minute is packed in each of these pump-meter units

The pumping unit is known as the Harmeco Model H-760-B, and is manufactured by the Harman Equipment Company of Los Angeles. Mounted on an easily handled skid base, the unit is dimensioned to permit installation within the can rack of most gasoline tank trucks.

A pressure actuated by-pass valve, an integral part of the pump, permits continued operation of the engine even when the discharge line is closed, without overloading the engine. The unit can be used for fueling equipment either from underground storage tanks, from drums, or from tank trucks.

1 1 1

### FIBERGLAS FILLER FOR SEAT AND SEAT-BACK CUSHIONS

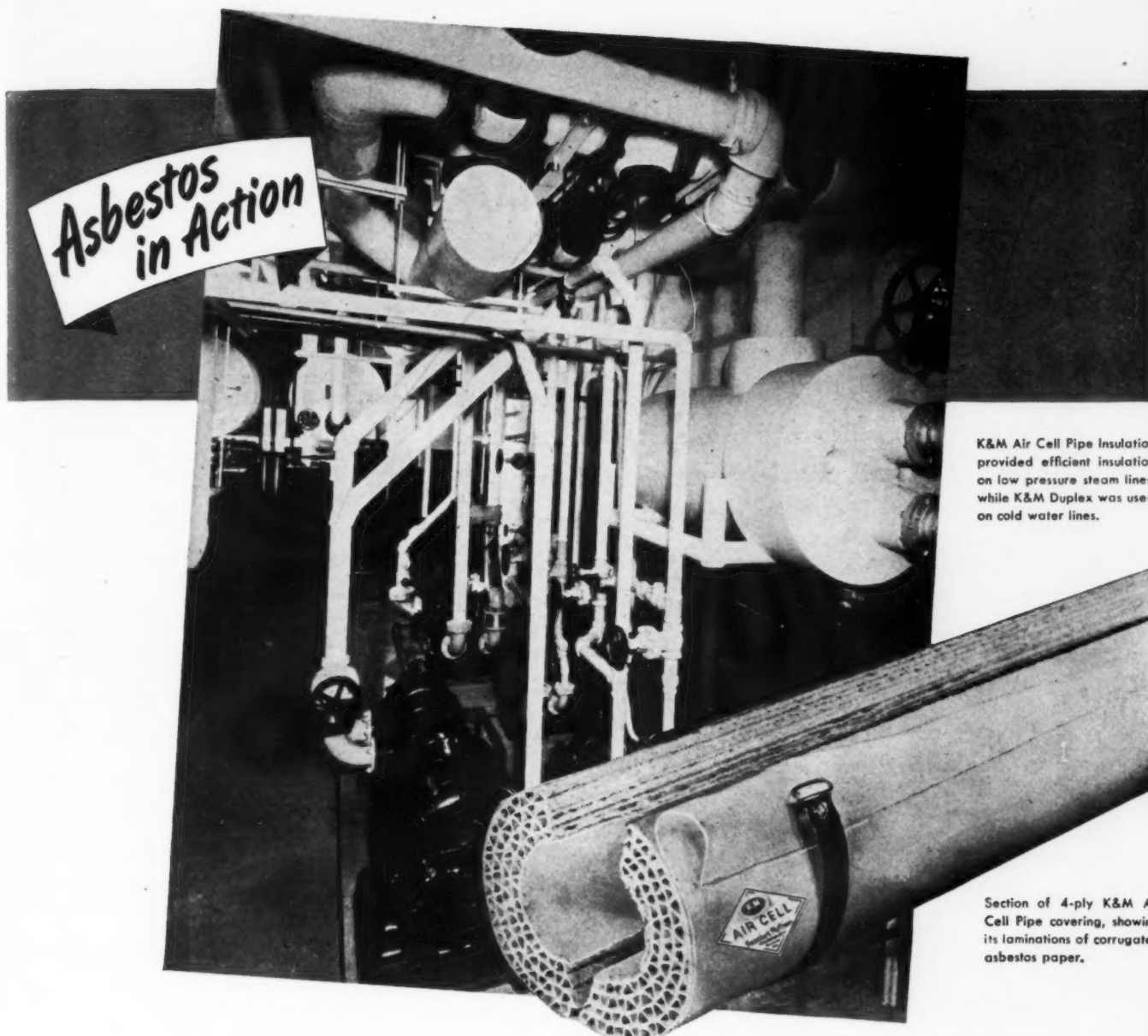
A Fiberglass superfine fiber material, for use as filler for railroad, aircraft, motor coach and automobile seat and seat-back cushions, is announced by Owens-Corning Fiberglas Corporation, Toledo, Ohio.

The superfine glass fibers provide a low-cost, light-weight, non-combustible, resilient filler with excellent over-all riding qualities. In a typical aircraft installation, where weight-saving is of major importance, use of the Fiberglass fibers in seat and seat-back cushions has resulted in a weight-saving of 2 pounds per seat.

Identified as Fiberglass Superfine PF, Type A44, the individual fibers have an average diameter of 11 one-hundred-thousandths (0.00011) of an inch. In order

(Please turn to page 198)





K&M Air Cell Pipe Insulation provided efficient insulation on low pressure steam lines, while K&M Duplex was used on cold water lines.

Section of 4-ply K&M Air Cell Pipe covering, showing its laminations of corrugated asbestos paper.

**For efficient low pressure insulation**

## K&M AIR CELL PIPE INSULATION

*Nature  
made Asbestos  
Keasbey & Mattison  
has made it serve  
mankind since 1873.*



The engineer for this Texas commercial building made a wise choice when he specified K&M Air Cell Pipe covering for the steam lines. He got an asbestos insulating material of exceptional efficiency on lines carrying up to 300°. He also got an economical installation... for K&M Air Cell's extreme light weight and split construction makes for easier application.

As a finish over the block insulation on the boilers, he chose K&M Asbestos Insulating Cement. This cement combines

maximum insulating efficiency with maximum covering capacity.

If you have a low pressure insulation problem, why not let our engineers tackle the job for you? Their training and experience are backed by a complete line of K&M insulating materials for every industrial need. And K&M has expert application contractors, located strategically throughout the country, to assure you of a high quality job. Write us—we'll attend to your inquiries promptly.

**KEASBEY & MATTISON  
COMPANY • AMBLER • PENNSYLVANIA**



## ARE FULLER PRICES HIGH OR LOW?

**W**HEN you have seen Fuller Brush prices revised in the past, it has been because we have developed new, cost-cutting methods or new machinery, whose savings are passed on to our customers.

Never have you seen Fuller prices matched to a competitive market by the substitution of shoddy materials.

Today's prices reflect outstanding values. This is evident in view of the materials you can identify in our industrial brooms, brushes and mops.

We provide you with complete and detailed descriptions of the materials in every product. Achieving these values results from a two-sided policy. Our Fuller Research Division continually investigates improved materials. Our Machine Division for many years has been inventing and building more efficient brush-making machinery.

It will pay you to investigate Fuller products, to know what goes into them, to see the extensive variety of weights and sizes, in various price ranges, each product designed to cut costs on a particular cleaning job. Ask our representative to call. Simply write to

INDUSTRIAL DIVISION

*The* **FULLER BRUSH** *Co.*

DEPT. 978

HARTFORD 2, CONN.

(Continued from page 196)

to provide dimensional stability and handleability, the fibers are treated with a resin binder and formed into blankets of 0.5-pound density, one inch thick.

Maximum riding qualities are obtained by folding, cutting and installing the material in accordance with tested procedure. It is recommended that batts be fan-folded vertically and compressed to approximately 2½-pounds density. For handling purposes, the fan-folded pack can be held together by stitching through with coarse twine. The pack is then sliced horizontally into pieces of the thickness required.

Each piece is inserted in a muslin bag that has been sewn to the cushion width, thickness and length. Before stitching the open end of the bag, the twine used to hold the pack together is cut and removed. The muslin-enclosed pack is installed over the insulated spring assembly.

1 1 1

### U. S. RUBBER ANNOUNCES NEW SPlicing COMPOUND

An oil-resistant compound for splicing electrical wire has been announced by the United States Rubber Co. The new compound is made of neoprene rubber combined with special synthetics. It is recommended for use on any electrical circuit coming in contact with oil, according to the announcement.

It will be distributed in the form of tape 30 ft. long, ¾" wide and .030" thick.

1 1 1

### ELECTRONIC POSITIONING CONTROL SYSTEM ANNOUNCED

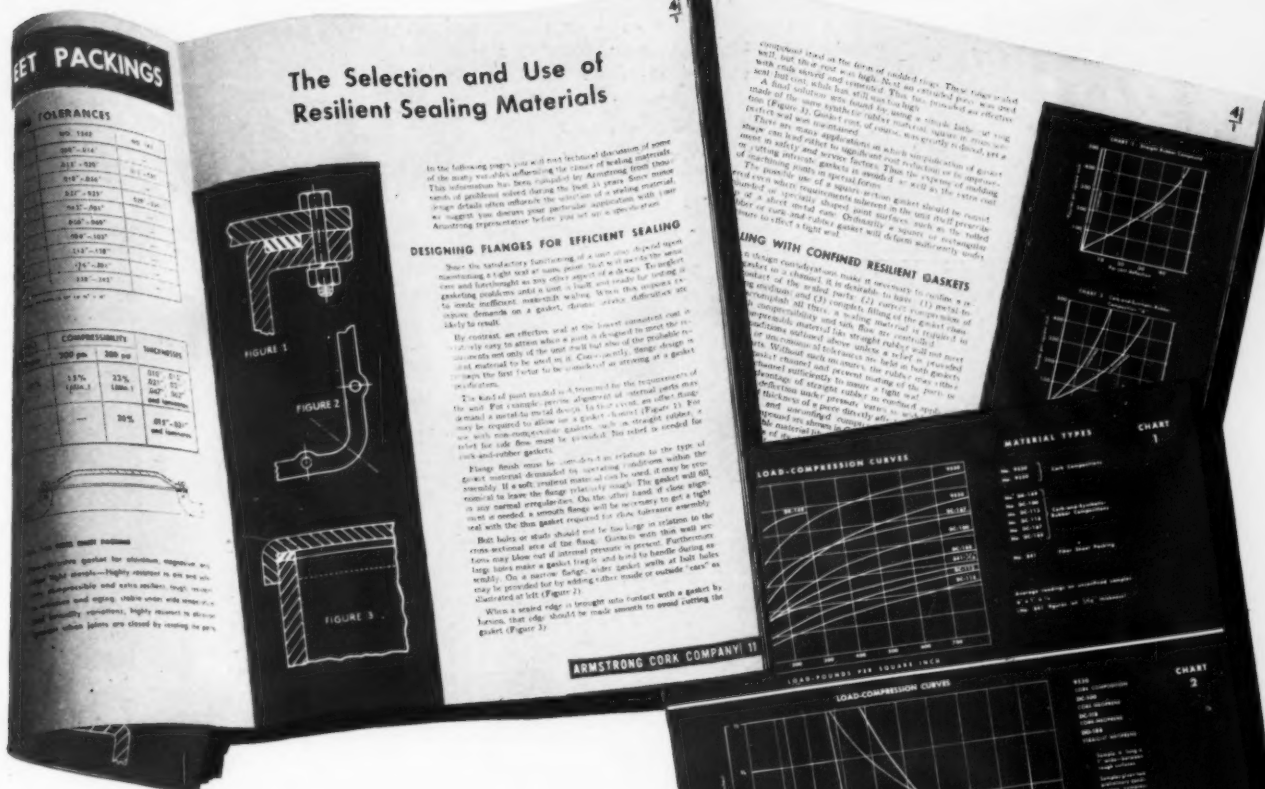
A new electronic positioning control system designed for such applications as accurately controlling inaccessible dampers from control stations on the floor, positioning heavy work in machine tools without time-consuming hand labor, and opening, closing, and adjusting to intermediate points valves and gates from a single coordinated control desk is announced by the Control Division of the General Electric Co.

The system has three parts—a master control station and a follow-up device, which can either be small selsyns or potentiometers depending upon the application, and an electronic control panel. The driving motor is not included in the system because any reversing a-c or d-c motor that can handle the load is acceptable.

The master control station may be placed in any desired location, because it is connected to the control panel by just three control leads. To operate, a dial is set in the same manner as a radio dial. The new system can be used on drives up to 1½ hp in general, and on many drives over this rating, after consideration of inertia of the load, speed, gear reducer arrangement, and accuracy of positioning needs.

The control panel is enclosed in a NEMA Type I case and is hinged to

(Please turn to page 200)



## NEW GASKET GUIDE

Booklet offers condensed data  
on materials and applications

Just published, "Armstrong's Gasket and Sealing Materials" puts into 20 pages the essential data you need to make a tentative choice of the proper resilient gasket or sealing material.

The first half of this booklet is devoted to application data and charts. These give the physical characteristics of each of Armstrong's four major types of materials: synthetic rubber compounds, cork-and-synthetic-rubber compositions, cork compositions, and fiber sheet packings.

The second half of this new booklet offers practical help on the selection and use of resilient sealing materials. Discussed here are such topics as: proper flange design, designing gaskets to reduce cost, and correct compression for various materials.

Write today for a copy of "Armstrong's Gasket and Sealing Materials." Armstrong Cork Company, Gaskets and Packings Dept., 7208 Arch Street, Lancaster, Pennsylvania.



**ARMSTRONG'S  
GASKET AND SEALING  
MATERIALS**

**ARMSTRONG CORK COMPANY**  
LANCASTER • PENNSYLVANIA

**ARMSTRONG'S GASKETS • PACKINGS • SEALS**



CREATED BY  
**Utica**  
FOR MORE TOOL MILEAGE

A favorite with farmers because no other tools are needed for building or repairing fences. The No. 1932 cuts . . . splices and stretches wire and is ideal for driving and pulling staples and post lugs.

**Pliers for Every Need**



No. 1932 - 10 1/4"  
Original Utica Fence Plier  
and Staple Puller  
For Metal and Wood Posts

UTICA  
**DROP FORCE & TOOL**  
CORPORATION  
UTICA 4, NEW YORK

(Continued from page 198)

swing out for easy servicing and inspection. The basic components of the system are standard control devices which have proved adequate and durable over long periods of operation.

1 1 1

#### LARGE PLASTICS PART WEIGHS 650 POUNDS

A 650 pound plastics part, said to be the largest ever produced by General Electric's plastics division, Pittsfield, Mass., was recently shipped to California. It is a component of the University of California's newest atom smasher.



The largest plastics part is 8 ft. in diameter. The rings are made of layers of glass fibers bonded with a polyester resin

The largest synchrotron part is 8 ft. in diameter. Together with nine additional plastics parts they will form the vacuum chamber of the atom smasher. General Electric's contribution to the synchrotron consisted of 9 rings and 3 vacuum manifolds made of a low-pressure laminated construction of layers of glass fibers bonded with a polyester resin.

1 1 1

#### SAE PUBLISHES TREATISE ON ALLOY STEEL HARDENABILITY

"Hardenability of Alloy Steels" has been published jointly by the Society of Automotive Engineers and the American Iron and Steel Institute as a book of complete and current data on designing, testing, and ordering steels by hardenability-band specifications. The treatise, available from SAE Special Publications Dept., 29 West 39th St., New York 18, N. Y., covers 62 tentative hardenability-band steels, 25 of which appear for the first time.

Second section presents the technical paper, "Selection of Automotive Steels on the Basis of Hardenability," by A. L. Boeghold, of Research Laboratories Div., General Motors Corp., Detroit, Mich. This paper, regarded as the classic of steel-hardenability literature, presents basic references for engineers and metallurgists, explains the hardenability theory, describes how to select steels by hardenability, and reveals the advantage of the H-band as a buying index.

Third section, describing the SAE

(Please turn to page 202)

## WAR SURPLUS

BRAND NEW GOVERNMENT ISSUE

### WATERPROOF IMPERMEABLE RUBBER GLOVES

ONLY  
**60¢**  
A PAIR

Oil, Acid and Waterproof.  
Soft, pliable, comfortable.  
Small, medium, large and extra large sizes. Shipped assorted sizes unless otherwise specified. Manufacturer's cost to government \$1.34 a pair.



**Order Direct from this Ad**

Satisfaction guaranteed or returnable.  
Terms — net 10 days to satisfactorily rated concerns. While they last.

**ROSE BROTHERS CO.**

1408 Harrison Ave., Cincinnati 14, O.



**CUSTOM MADE  
To Your  
REQUIREMENTS**

If you require coated fabrics for specific applications, Hodgman will engineer them for you. Such valuable properties as great flexibility, light weight, unusual toughness, resistance to stains, abrasion, extremes of temperature, and protection against moisture, deterioration and many chemical agents can be built to order in Horco Fabrics. Hodgman's laboratory facilities and expert engineering service are available to you. Your inquiries are solicited.

**HODGMAN RUBBER CO.**  
Framingham, Mass.

## Two ways to be particular when you buy Fluorescent Lamps



**1** **ONE WAY** would be to train and equip yourself to recognize quality in every element that goes into a fluorescent lamp. Then, if you're as particular as G-E Lamp scientists are, you'd insist on nothing less than 99.998% *purity* in the drop of mercury that is a part of every fluorescent lamp. Tiny though the drop is, any contamination would raise hob with lamp life. So General Electric developed the apparatus above to purify virgin mercury to within two-thousandths of one per cent of absolute purity! Duplicating G-E's quality methods would be a costly and difficult process. The simplest way to be particular about lamp quality is to merely . . .

### **2** **INSIST ON THE** **MONOGRAM**

whenever you buy fluorescent lamps for your business and home. This familiar trademark assures you the advantages of all that is latest and best in lamp development. \*And General Electric Lamp research is at work constantly to make G-E lamps ever better, and to make them Stay Brighter Longer.

**G-E LAMPS**  
**GENERAL  ELECTRIC**



## For Greater Speed and Safety in Industrial Jacking Jobs

Light and powerful, Simplex Industrial Hydraulic Jacks help make all types of shop and factory jacking jobs move faster. Simplex gives you complete jack safety—each model tested to 50% over rated capacity—ease of operation and the ability to meet all your jack requirements.

For tough pulling jobs, there's the Simplex-Jenny Center Hole Hydraulic Puller to cut man hours, save time and money. Whatever your Hydraulic Jack or Jenny need, you can find a Simplex to help you get more work done in your plant, faster and with greater safety.

### TRY ONE FREE!

Let Simplex Jacks or Jennys prove themselves on your job. Ask for 30-days free trial of the model you need, without obligation. Simplex Hydraulic Jacks are available in 3, 5, 8, 12, 20, 30, 50 and 100-ton capacities; Jennys in 30, 60, 80 and 100-ton capacities. For free trial, simply state capacity desired and send request on your letterhead to:

**Simplex**  
LEVER SCREW HYDRAULIC  
**Jacks**

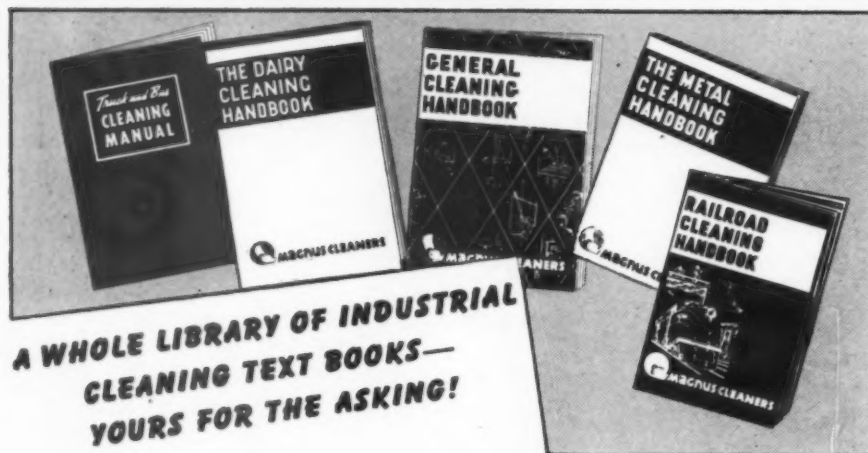
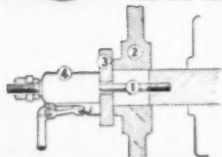
TEMPLETON, KENLY & CO.  
1014 Central Avenue  
Chicago 44, Illinois

Put **SIMPLEX**  
in the picture

### SIMPLEX-JENNY CENTER HOLE HYDRAULIC PULLER



• Patented center hole principle makes the Simplex Jenny its own back-up to do tough pulling jobs fast and easy



## A WHOLE LIBRARY OF INDUSTRIAL CLEANING TEXT BOOKS— YOURS FOR THE ASKING!

If you want authoritative guidance in selecting the most economical and effective cleaning methods for your plant, here are the reference books you need. These Magnus Cleaning Manuals cover: Automotive • Aviation • Baking • Dairies • Truck & Bus Fleets • Food Processing • Buildings • Metal Products • Petroleum

Railroads.

Write for as many copies of each as you can use to assist you in properly planning your cleaning operations.

Magnus Chemical Company, 93 South Ave., Garwood, N. J. In Canada — Magnus Chemicals, Ltd., 4040 Rue Masson, Montreal 36, Que.



IN INDUSTRY IT'S  
**MAGNUS**  
CLEANERS • EQUIPMENT • METHODS

(Continued from page 200)

Method of Determining Hardenability, outlines procedure and equipment for the standard Boeghold and Jominy end-quench hardenability tests. A fourth section presents six tables on conversion of steel hardness numbers.

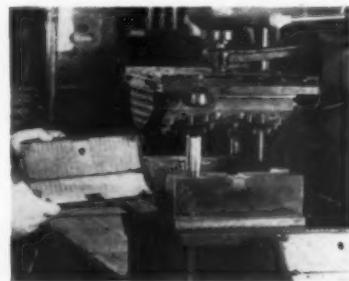
The treatise is designed to stimulate interest in selecting and buying steels by hardenability, now regarded as superior to chemical composition because of the close relationship between hardenability, physical properties, and ultimate satisfactory performance.

The price of the treatise is \$1.00 to SAE Members, \$2.00 to others.

1 1 1

### THREE PRESSES PRODUCE 300 GRILLE ASSEMBLIES PER HOUR

A standard hydraulic bench type press made by the Colonial Broach Co. of Detroit, provides the answer to obtaining high output rates with accurate control at the plastics plant of the Ford Motor Co. in the assembling of metal screens to plastic radio grilles. Ford is currently producing some 300 grille assemblies



Assembling metal screens to plastic radio grilles in Ford Motor Company's plastics plant

per hour on three of these 'Junior' presses, equipped by Ford with a special upper and lower die. The upper die, of cast iron with some 24 projecting fingers, is electrically heated with a thermostatically controlled resistance coil. The screen is laid over the plastic grille which is laid in the lower die. The upper die moves down until the heated fingers have pressed the screen into the plastic to a depth of 1/16 inch. The head is retracted, the plastic solidifying to securely hold the screen at the 24 points of attachment.

1 1 1

### PLEXIGLAS AVAILABLE WITH CORRUGATED AND PATTERNED SURFACES

Plexiglas acrylic plastic is now available in a variety of patterned and corrugated surfaces, according to announcement by Rohm & Haas Co., 224 Washington Square, Philadelphia, Pa. The designs include broad and narrow flutings, ribbed, pebbled, dotted and frosted finishes, which may be applied to both sides of Plexiglas if desired. The patterned material, available in .125-in. and .250-in. thicknesses, may be formed and machined with ease.

(Please turn to page 204)



# How Riverside Nickel Silver Helps Add Years To The Life of Your RONSON Lighter



Riverside Nickel Silver is used in the fabrication of many essential parts of Ronson lighter products exposed to wear, such as the shell and segments.



Special Note—A Ronson Lighter can't stay lit as shown on cake. "Press, it's lit—Release, it's out, the instant you lift your finger."

A good lighter is a most useful and efficient possession. But lighters are subject to severe abuse. Lighter manufacturers must take this fact into consideration and buy materials of the highest quality, to build lighters that will give uninterrupted service over a long period of years.

The makers of Ronson, one of the world's truly great lighters, use Riverside Nickel Silver to fabricate many essential parts (see above) exposed to wear. (Many of the Ronsons made more than twenty years ago are still giving unfailing service.) Riverside Nickel Silver is silvery white clear-through and, as the years pass by, its bright lustre does not

wear off. It has an excellent surface for plating or polishing and readily takes a fine damaskeen-type finish.

Riverside Nickel Silver is tough, resistant to wear, fatigue and corrosion but easy to machine in any manner and weldable by all methods. It is extremely workable and can be formed, bent, drawn, stamped, punched, embossed or spun.

You may be able to improve your product with Riverside Nickel Silver or with Riverside's other alloys; Phosphor Bronze and Beryllium Copper. Our metallurgists are ready to help you. Write for information and catalogs.

**INSIDE RIVERSIDE**—We not only say we are flexible in our thinking and operations; we have the alloys to prove it. Fifty years of supplying non-ferrous metals of a highly specialized nature, to almost every type industry you can name, has kept our minds young, our viewpoint fresh and our metallurgists active solving new problems and improving alloys. Tell us about your coming requirements, large or small. We think you'll like the way we tackle a job.

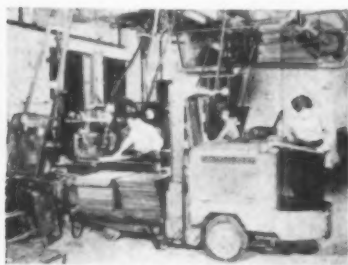
**RIVERSIDE**

**RIVERSIDE METAL COMPANY**

NEW YORK CHICAGO RIVERSIDE NEW JERSEY PHILADELPHIA

## Substituting Storage Battery Power For Muscle Increases Plant Capacity

Ten years ago the various items entering into and used in the manufacture of the American Stove Company's line of "Magic Chef" domestic and commercial ranges at its Cleveland, Ohio, plant, all were manually handled and transported. Such items as sheet steel, fittings, items of machinery, machine parts and dies, were all moved into, along, and out of the production line by muscle and by hand propelled trucks.



Cost of moving 2½ tons of steel from shearing department to press room was cut from 35¢ to 4¢ a load

As orders increased, and operations of the plant were stepped up, it became apparent to management that some means of increasing the flow of material, and increasing plant capacity would have to be found. Recourse was had to storage battery-powered industrial trucks, the first purchased being a highlift platform truck of 3,000 pounds capacity. An immediate cut in the cost of handling material was noted as the truck with its operator took over the work of several men whose previous duties had been only to move material from point to point.

The following year, and since, additional trucks were purchased as the need arose until today four highlift platform trucks, one equipped with a die-pulling winch, handle the entire material traffic flow and do a multiplicity of jobs around the plant from the shearing department into and out of the press room, to spot-welding, to shipment on over-the-road trucks to the enameling department, in another section of the plant.

Because it is a matter of some ten years since the first battery-powered truck was installed and manual handling operations were done away with, records which would provide some comparison between handling costs then and now, are not readily available.

### Substantial Savings

"While I can't tell you just what the savings were," said A. W. Leeseberg, Manager of the Cleveland Division, "I know they were substantial—so substantial that it was only good business to get additional trucks and thus free labor for other more productive jobs." Mr. Leeseberg said he would not dispute re-

ported handling cost cuts of up to 75%, which had been attributed to the system immediately after its installation. "Those figures sound as if they might be accurate," he said, adding "Our records, as I have told you, have been stored away and I was not intimately connected with general supervision of that department of the factory at the time. I can see, however, that undoubtedly there probably were savings as substantial as this."

Loads of sheet steel, up to 5,000 pounds in weight, are moved by battery-powered truck from the shearing department to the press rooms. It is known that this particular operation used to cost 35¢, while it now is estimated to cost about 4¢. This saving is one that is typical of all operations performed by the trucks. Bulky loads of pressed forms are moved into the spot-welding department and out again, being carried on skids.

The heaviest truck in service at American Stove's Cleveland plant has a capacity of 5,000 pounds. The next is a 4,000-lb. capacity platform truck with a die-pulling winch. This is in constant use moving between die storage areas and the presses, with dies ranging in weight from several hundred pounds up to two tons. The other lift trucks also are used to move the lighter weight dies.



Motor-driven, die pulling winch on this truck handles dies up to two tons

Trucks are in actual service approximately seven-and-a-half hours out of a shift's eight hours, with two of the trucks working two shifts daily. Batteries are charged automatically, in the single-shift trucks, and charged on racks. Checked weekly, with a thorough overall inspection once a month, the trucks, according to Mr. Leeseberg, and to George Feathers, Supervisor of the Fabricating Department, have been operated with "an absolute minimum of down time, and with no unscheduled loss of service."

Dispatch of the trucks to work tours is in charge of the foreman of the fabricating department, while signal lamps for various departments operating in side bays from the main traffic aisles, notify truck operators of material awaiting transfer to other operations.

(Please turn to page 206)

Where to buy  
**ESNA**  
TRADE MARK  
**ELASTIC STOP NUTS**

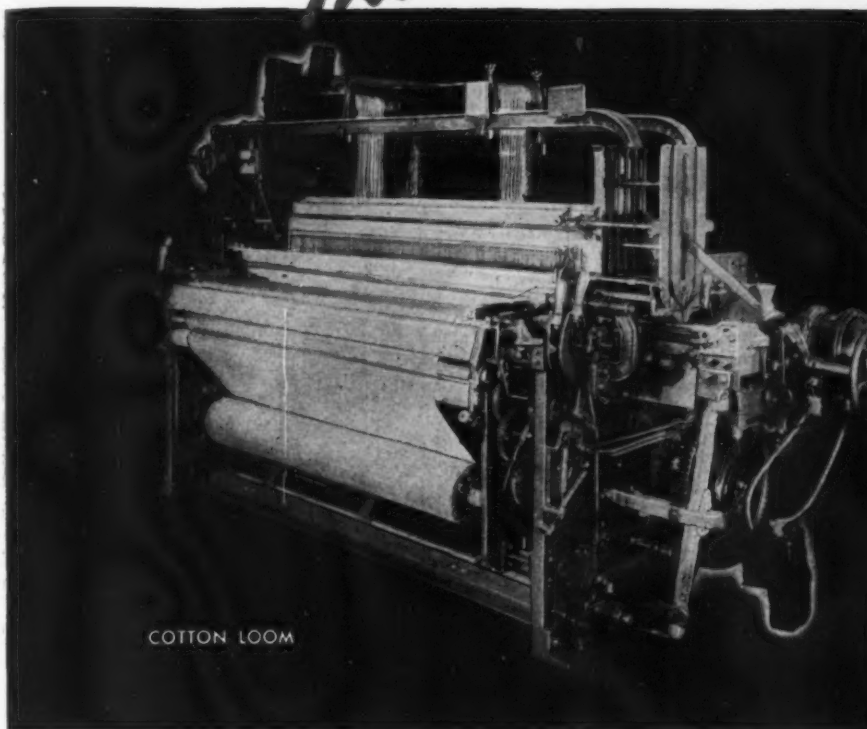
### INDUSTRIAL JOBBERS

**COLORADO:** M. L. Foss, Inc., 1901 Arapahoe St., Denver. **CONNECTICUT:** C. S. Mersick & Co., 260 State St., New Haven. **ILLINOIS:** Supplies, Inc., 564 West Adams Street, Chicago; Globe Machinery & Supply Co., 617 Fifteenth St., Moline. **INDIANA:** The Central Rubber & Supply Co., 120 South Meridian St., Indianapolis. **IOWA:** Globe Machinery & Supply Co., 205 Third Ave., S. W., Cedar Rapids; Globe Machinery & Supply Co., East First St. & Court Ave., Des Moines. **KENTUCKY:** Neill-LaVie Supply Co., Inc., 505 West Main St., Louisville. **MARYLAND:** Carey Machinery & Supply Co., 119 East Lombard St., Baltimore. **MASSACHUSETTS:** Chandler & Farquhar Co., 900 Commonwealth Ave., Boston; J. Russell & Co., Inc., 361 Dwight St., Holyoke; Brierly, Lombard & Co., Inc., 107 Foster St., Worcester. **MICHIGAN:** The Charles A. Strelinger Co., 149 East Larned St., Detroit. **MINNESOTA:** Kelley-How-Thompson Co., 309 South Fifth Ave., Duluth; Kulseth Supply Co., 117 Washington Ave., Fergus Falls; Minneapolis Iron Store, 524 North Washington, Minneapolis; Uptown Iron Store, 918 West Lake St., Minneapolis; Berg Supply Co., Willmar. **MISSOURI:** The Faeth Co., 1608 McGee St., Kansas City. **MONTANA:** Kelley-How-Thompson Co., Billings. **NEW JERSEY:** Brodhead-Murphy Co., 525 West Grand St., Elizabeth. **NEW YORK:** Beals, McCarthy & Rogers, Inc., 50 Terrace, Buffalo; A. N. Nelson, Inc., 370 Hamilton Ave., Brooklyn; Keystone Nut & Bolt Co., 62 Murray St., New York City; Syracuse Supply Co., 314 West Fayette St., Syracuse. **NORTH DAKOTA:** Empire Supply Co., Fargo; Minot Supply Co., Minot; Grand Forks Supply Co., Grand Forks. **OHIO:** The E. A. Kinsey Co., 331 Fourth St., West Cincinnati; Strong, Carlisle & Hammond Co., 1392 West 3rd St., Cleveland; The Smith Brothers Hardware Co., 580 North Fourth St., Columbus; The M. D. Larkin Co., 115 East Third St., Dayton; Mill & Factory Supply Co., 622 Southard St., Toledo. **PENNSYLVANIA:** Emco Supply Co., Lansford; Standard Shannon Supply Co., 13 Letitia St., Philadelphia; Somers, Fitter & Todd Co., 327 Water St., Pittsburgh; E. Keeler Co., 238 West St., Williamsport. **RHODE ISLAND:** The Congdon & Carpenter Co., 405 Promenade St., Providence. **SOUTH CAROLINA:** Taylor Parker Co., Florence. **SOUTH DAKOTA:** Aberdeen Supply Co., Aberdeen; Cave Supply Co., Watertown. **TEXAS:** Peden Iron & Steel Co., 700 North San Jacinto St., Houston. **VIRGINIA:** Taylor Parker Co., Inc., 47 Commercial Place, Norfolk; Taylor Parker Co., Inc., 801 East Carey St., Richmond. **WASHINGTON:** Northwest Nut & Bolt Co., 4502 Fourteenth Ave., N. W., Seattle. **WEST VIRGINIA:** Superior Sterling Co., 200 Bluefield Ave., Bluefield. **WISCONSIN:** John Pritzlaff Hardware Co., 333 North Plankinton Ave., Milwaukee.

### SALES OFFICES AND SALES ENGINEERS

A. K. Whitaker, 4076 Powers Ferry Rd., N.W., ATLANTA, Ga.; 20 North Wacker Drive, CHICAGO, Ill.; 1836 Euclid Ave., CLEVELAND, Ohio; 522 New Center Bldg., DETROIT, Mich.; R. G. Brandes, 1205 Milford St., HOUSTON, Tex.; Collins-Powell Co., 9247 Alden Dr., Beverly Hills, LOS ANGELES, Calif.; 115 Broadway, NEW YORK CITY; H. J. Forst, 225 Catalpa Place, PITTSBURGH, Pa.; 2330 Vauxhall Rd., UNION, N. J. In CANADA: A. J. Campbell & Co., Box 430 (Place d'Armes), Montreal.

The ESNA advertisement shown opposite this column explains the dependable protection provided by all types of Elastic Stop Nuts.

**SELF-LOCKING***Protects Inaccessible Parts***AGAINST****LOOSENING AND BREAKING**

COTTON LOOM



CRANKSHAFT ASSEMBLY

## *The Red Elastic Collar protects prestressed or positioned settings against VIBRATION!*

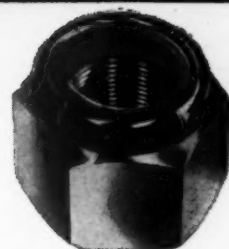
What happens when the inaccessible fasteners on the crankshaft assembly are loosened by the endless vibration built up by the distinct shock of the drive gears at pick and beat up? Mechanically, prestressed and positioned settings are changed, split-second, synchronized timing is upset, and loose parts wear beyond repair. This means costly repairs and unnecessary down time.

Production-wise, it means that uneven power delivery is causing such cloth defects as overshoots, broken ends, pull-ins and mispicks.

Here's a suggestion to loom fixers. When repairs or adjustments make it

necessary to remove an ordinary fastener, replace it with an ESNA Elastic Stop Nut. They're immediately available from stock.

ESNA Elastic Stop Nuts—with the self-locking, self-sealing and re-usable Red Elastic Collar—are easily adjusted or removed. They provide dependable protection against Vibration, Thread Corrosion, Thread Failure, and Liquid Seepage. ESNA engineers are now ready to study your fastener problems. Address: Elastic Stop Nut Corp. of America, Union, N. J. Sales Engineers and Distributors are conveniently located in many principal cities.



### LOOK FOR THE RED COLLAR THE SYMBOL OF SECURITY

It is threadless and dependably elastic. Every bolt—regardless of commercial tolerances—impresses (does not cut) its full thread contact in the Red Elastic Collar to fully grip the bolt threads. In addition, this threading action properly seats the metal threads—and eliminates all axial play between the bolt and nut.

All ESNA Elastic Stop Nuts—regardless of size or type—lock in position anywhere on a bolt or stud. Vibration, impact or stress reversal cannot disturb prestressed or positioned settings.

**ESNA**  
TRADE MARK

## ELASTIC STOP NUTS

INTERNAL  
WRENCHING

ANCHOR



WING



SPLINE



CLINCH

GANG  
CHANNEL

CAP

PRODUCTS OF: ELASTIC STOP NUT CORPORATION OF AMERICA



# ARMSTRONG



New  
TOOL HOLDERS

**MAKE MORE PROFIT ON  
EVERY OPERATION**

With ARMSTRONG TOOL HOLDERS you can take advantage of the new high speeds and heavier feeds of the newer cutting materials, without revolutionary changes or costly experimentation. They are the most profitable tools obtainable; the lowest in initial cost, the longest in service and most economical in use, for all incorporate the basic Armstrong Principle of small interchangeable cutter-bits in permanent drop forged shanks. They are the most readily obtainable tools too, for they are stocked by all leading distributors.

Write for circulars describing:

- (1) ARMSTRONG Carbide TOOL HOLDERS and ARMIDE (Carbide Tipped) Cutters
- (2) ARMSTRONG C A TOOL HOLDERS and ARMALLOY (Cast Alloy) Cutter-bits.

**ARMSTRONG BROS. TOOL CO.**

"The Tool Holder People"

303 No. Francisco Ave., CHICAGO, U. S. A.  
New York San Francisco

**MORE THAN**

**70**

**OAKITE  
MATERIALS**

**... to help solve all your cleaning problems**

They say that the wisest economy is wise spending — good point to remember when you specify cleaning materials. For, no matter the product you make, chances are that cleaning plays a big dollar and cents part in its making. That's why it's wise economy to specify Oakite materials to get cleaning that is designed to fit your production requirements.

Whether you use dip, brush, spray or electrolytic cleaning methods . . . whether the job is descaling, degreasing, paint-stripping or related surface preparation jobs, there's an Oakite material and method to handle the job easily, quickly and at low cost.

Your nearby Oakite Technical Service Representative will gladly review your cleaning procedures . . . work out techniques bound to make your cleaning dollars go further. Drop us a note at Oakite Products, Inc., 54 Thames St., New York 6, N. Y. We'll have him call.

**OAKITE**

REG. U. S. PAT. OFF.

**SPECIALIZED CLEANING MATERIALS • METHODS • SERVICE**

Technical Representatives in Principal Cities of U. S. & Canada

## PORTABLE PUBLIC ADDRESS SYSTEM

Illustration shows the Siltronic PA-4, fully portable, public address system made by The Siltronic Company, Point Building, Pittsburgh 22, Pa. The unit is said to meet practically every loud speaking requirement, yet there is nothing to plug in—no wires to connect. All the user has to do is to pick up the microphone and talk. The amplifier is said to be audible for 1200 feet. The case is 9" high, 7½" wide, 12" deep, and with batteries weighs 12 pounds.



Portable address system, battery operated, has range of 1200 feet

The company states that the unit is built to the same rigid specifications as its military forerunner. It has a high gain, three-state amplifier; crystal, high fidelity, microphone in die cast housing; and a heavy duty, 6-inch permanent field speaker. It utilizes three tubes, and three batteries.

♦ ♦ ♦

## "ELECTRONIC OVEN" DESIGNED TO HEAT PRE-COOKED FROZEN MEALS

General Electric engineers at Syracuse, N. Y. have developed an "electronic oven" for use in eating places where it is desired to serve hot pre-cooked frozen meals quickly and efficiently. The unit heats these meals in about 75 seconds to an average temperature of 160 degrees F.

The "electronic oven" is being operated in tests at Maxson Food Systems, Inc. headquarters at 460 West 34th Street, New York City. Until field tests have been completed, it is not planned to produce the equipment in large quantities, G-E officials explained.

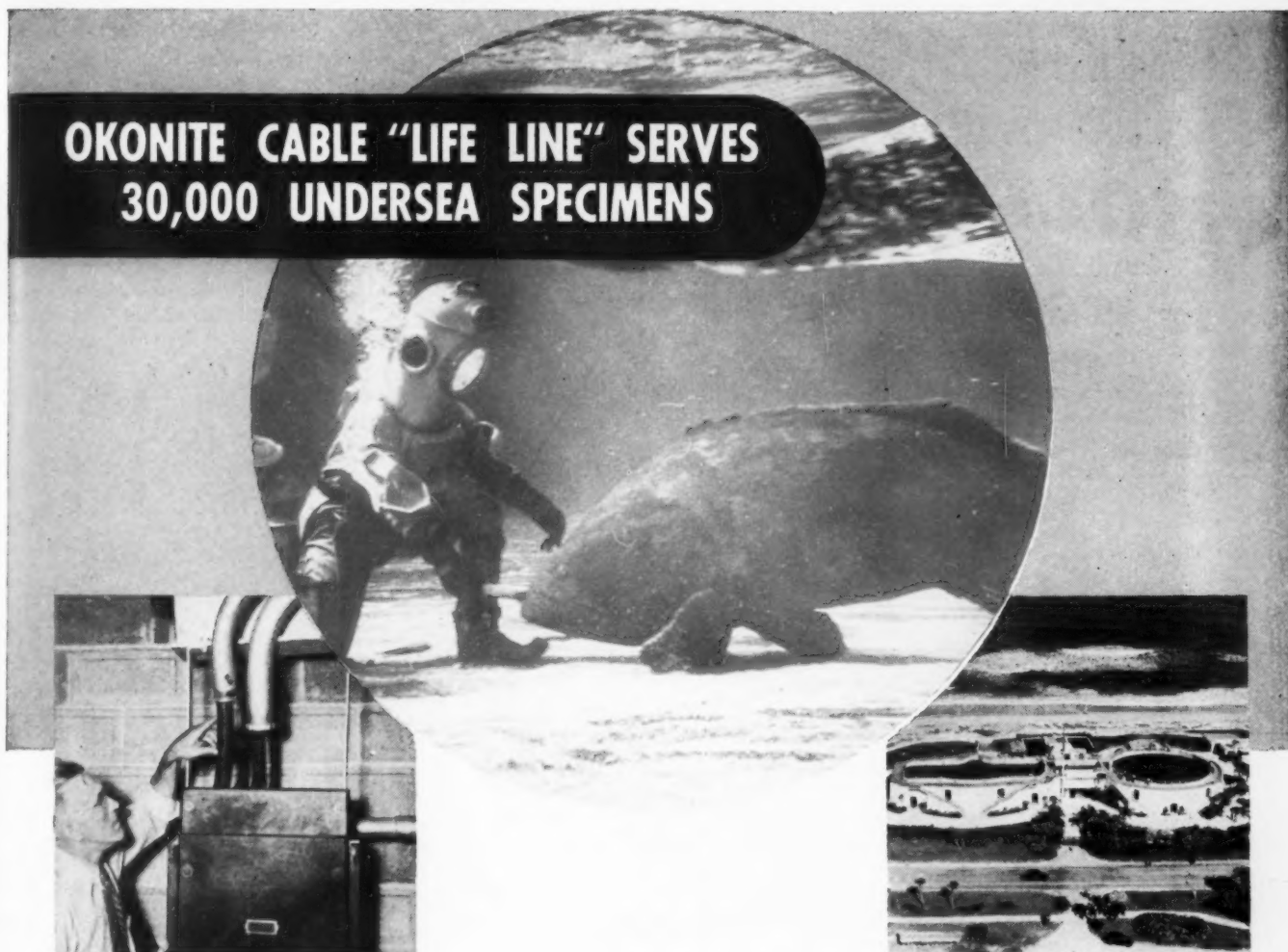
Application of the unit as presently designed would be limited to heating pre-cooked frozen foods and would not extend to general cooking as by conventional methods. It is not a home unit, G. E. emphasizes.

The "electronic oven" uses microwave radio energy similar to that used in the operation of the "electronic canteen" which the company has produced for heating hot dogs, hamburgers and cheese sandwiches. The amount of power required to operate the new unit is the same as that used for a domestic electric range.

At first glance the unit looks like a small domestic refrigerator. (It is 54 inches tall, 33 inches wide, and 22 inches deep.) Close inspection reveals a small

(Please turn to page 208)

## OKONITE CABLE "LIFE LINE" SERVES 30,000 UNDERSEA SPECIMENS



Maintenance Superintendent C. R. Swartz checks Okonite cable at Marine Studios.

Air view of Marine Studios reopened after wartime closing.

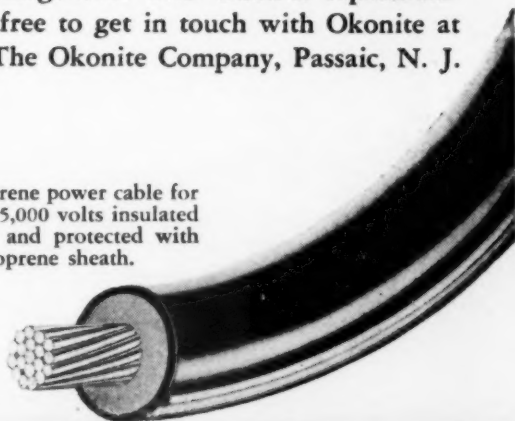
In the widely-known Marine Studios at Marineland, Fla., ocean floor conditions are duplicated in two giant tanks. More than 30,000 marine specimens are presented in their natural setting and are seen by steady streams of visitors to this \$1,000,000 research center and popular showplace.

Life line to these large and small undersea specimens in this permanent exhibit is power cable built by Okonite and insulated with Okolite-Okoprene on individual conductors and covered over-all with a substantial Okoprene sheath. Shown in the photograph is the main switch panel for general power distribution (a 2,300 volt circuit.) Power is taken to a transformer bank where it is stepped down to 220-110 volt circuits furnishing electricity for motors ranging from  $\frac{1}{4}$  to 30 h.p. These motors pump more than 7,000,000

gallons of sea water into the tanks daily.

"Unusual" cable installations have a way of turning out to be Okonite. Hundreds and hundreds of individual problems of electrical distribution and transmission have been worked out by electrical engineers in industry and utilities when they talk things over with Okonite representatives. Feel free to get in touch with Okonite at any time. The Okonite Company, Passaic, N. J.

Okolite-Okoprene power cable for service up to 5,000 volts insulated with Okolite and protected with a bonded Okoprene sheath.



# OKONITE

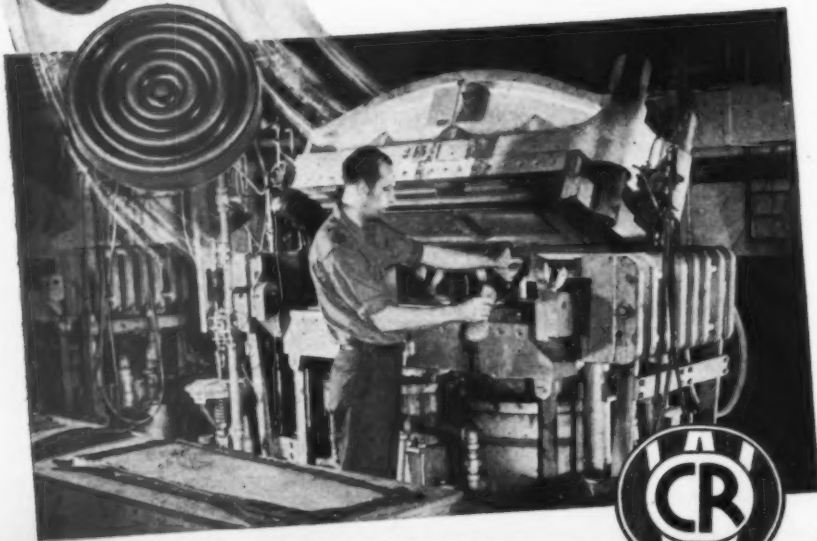


insulated wires and cables

# MOLDING RUBBER is work for Specialists

Continental's specialization is based not only upon its 44 years experience, but upon the development of specialized equipment such as the automatic double ram tilting top press shown below. Millions of molded parts made for scores of industries have earned Continental a high reputation. Whenever you have molded rubber parts to plan and purchase, why not have Continental's recommendation?

*See our Catalog in Sweet's*



Rubber by **CONTINENTAL**

Baltimore, Md.  
Boston, Mass.  
Buffalo, N. Y.  
Chicago, Ill.  
Cincinnati, Ohio  
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#### BRANCHES

Dayton, Ohio  
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Memphis, Tenn.  
Milwaukee, Wis.

New York, N. Y.  
Philadelphia, Pa.  
Pittsburgh, Pa.  
Rochester, N. Y.  
St. Louis, Mo.  
San Francisco, Cal.  
Syracuse, N. Y.

**CONTINENTAL RUBBER WORKS • ERIE, PENNA., U.S.A.**

(Continued from page 206)

aluminum door near the top through which the meals are passed to the oven.

Here is how the "electronic oven" works. After it has been turned on for the day's operation, the waitress or operator places the pre-cooked food in the heating cavity and closes the oven door by treading on a bar near the bottom of the unit. The high-frequency radio power goes on automatically and later is turned off by the timer. When the power shuts off the door opens automatically and the meal is ready to be served.

1 1 1

## SOLENOID DIFFUSER GIVES AUTOMATIC INSECT CONTROL

Developed by the Virginia Smelting Company, West Norfolk, Vt., a new device called the "Lethalaire Solenoid Diffuser" is said to provide automatic insect control for enclosed spaces.

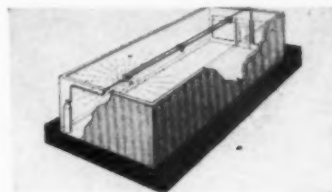


Diagram of automatic insect control system

Designed for the company's new aerosol spray "Lethalaire", the system will apply an aerosol insecticide in any enclosure in the particle size recommended for maximum killing effect. According to the manufacturer, it will automatically calibrate and control the correct entomological dosage, preventing unnecessary waste. It is said to afford maximum safety by preventing overdoses and reducing undesirable residues to a minimum. Permanently installed, it becomes as much a part of the building as the heating system.

Solenoids which look like sprinklers of a fire-sprinkler system, are spaced at calculated distances on the ceiling, and electrically connected to a wall switch, and by copper tubing to a cylinder of insecticide under pressure. Snapping the switch permits a fine mist of insecticide to emanate from the solenoids. The valve cuts off automatically when the right amount of insecticide has been dispersed. Department of Agriculture recommendations on dosage for particular areas are available.

1 1 1

## MECHANIZED HANDLING AS AID TO TRANSPORTATION

How mechanized material handling is preventing bottlenecks in the distribution of essential goods by all forms of transportation is featured in a special Transportation Issue of "Material Handling News", illustrated magazine published by Clark Truactor.

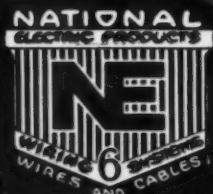
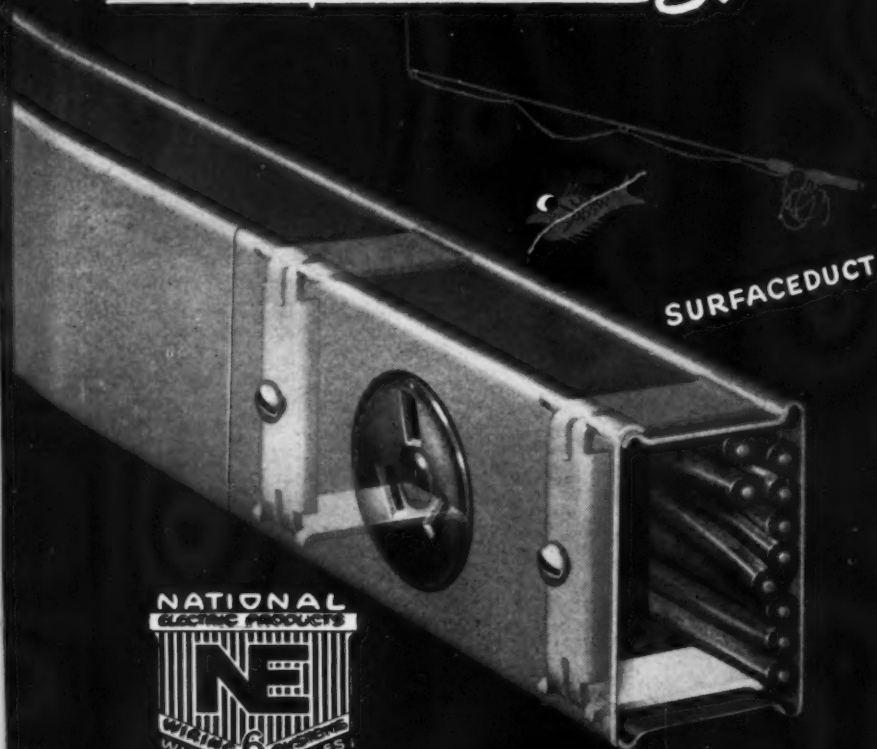
Based on a series of factual reports generously illustrated with on-the-job photographs, the magazine shows how

(Please turn to page 210)





*Then you will like  
National Electric Surface Raceways  
-all with the famous "lay-in" principle.  
They Require No Fishing!*

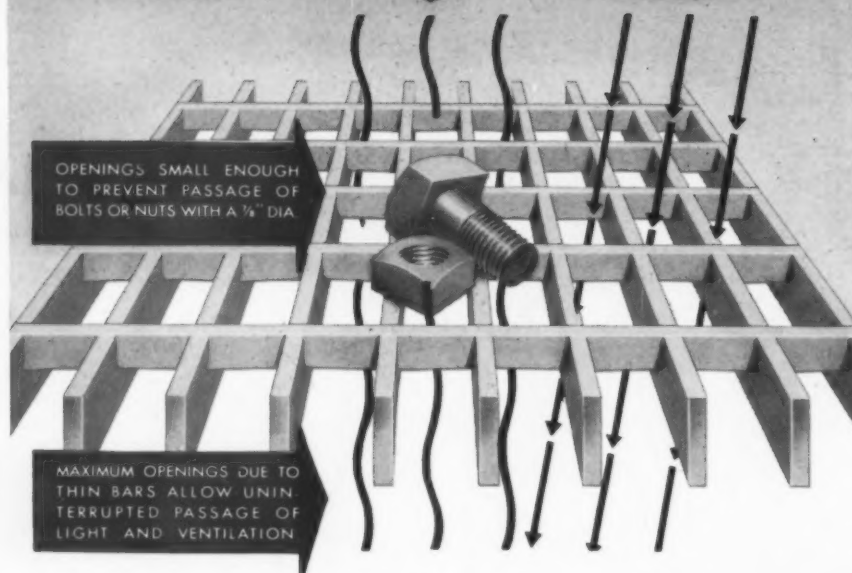


A raceway for every purpose. Lay the wires in the base, snap on the capping. Smooth, neat appearance. Safe. Approved and listed by Underwriters' Laboratories, Inc. Let us send you complete information.

SOLD THROUGH LEADING ELECTRICAL WHOLESALERS

**National Electric Products Corporation**  
**Pittsburgh 30, Pa.**

## This is TRI-LOK OPEN STEEL FLOORING



Extra strong construction—openings closely spaced—available in rectangular, diagonal and U shapes—with Safety Steps. Ask for Bulletin 1140.

**DRAVO CORPORATION, NATIONAL DEPARTMENT**  
300 PENN AVENUE, PITTSBURGH 22, PA.  
(Distributor for THE TRI-LOK COMPANY)



## Smart Durable VUL-COT WASTE BASKETS

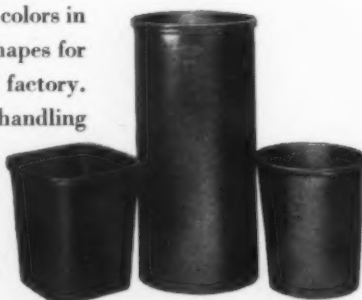
TRADE MARK REG. U. S. PAT. OFF.

### Reduce costs in handling waste



VUL-COTS save you money! Made of practically indestructible hard vulcanized fibre—they give increased service, reduced maintenance and replacement costs. Guaranteed for 5 years. Attractive colors in convenient sizes and shapes for every use in office and factory. To save money in handling waste—you're wise to insist on VUL-COTS.

*Not available now...  
but worth waiting for.*



**NATIONAL VULCANIZED FIBRE CO.**  
WILMINGTON 99 DELAWARE



(Continued from page 208)

fork trucks and towing tractors are revolutionizing the handling of freight shipped by rail and air, highway and water as well as movement in and out of transit storage.

Also featured are authoritative comments cited from articles and addresses by leading transportation officials. Mechanized handling is stressed as a practical means to prevent huge accumulations of goods, and to break bottlenecks that retard smooth, swift flow.

A copy of the Transportation Issue of "Material Handling News" may be obtained on request to Clark Tractor, division of Clark Equipment Company, Battle Creek, Michigan.

1 1 1

### NEW PEELABLE PLASTIC SPRAY-BOOTH COATING

"Liquid Envelope" peelable plastic film, made by Better Finishes & Coatings Inc., 268 Doremus Ave., Newark 5, N. J., is now being supplied in a special formulation for coating spray-booths.



Peeling plastic film from spray-booth

The new material is sprayed on the clean booth in a film .002" to .005" thick. When the booth is ready for cleaning, the coating is peeled off right down to the metal in large sheets, carrying with it all accumulated paint, lacquer and spray-dust.

The manufacturers state that a 6' x 6' spray-booth can be stripped clean in less than 5 minutes, and recoated in the same time. No scraping is required—the plastic film peels as simply as a banana.

1 1 1

### ANNOUNCE FOUR NEW CARBURIZING STEELS

A new series of four improved carburizing steels, under the name U. S. S. SuperKore, has been announced by the Carnegie-Illinois Steel Corp. The steels are intended to meet the need for deep hardening steels which can be easily processed and machined into airplane, truck, bus and other gears, shafts and pinions subject to heavy duty service. They are fundamentally designed to cut both material and manufacturing costs.

Company metallurgists have made effective use of the alloying elements and improved the products by means of a

(Please turn to page 212)

# IT'S HERE!

## the WORKSAVER

*Electric Lift Truck*



**ELECTRIC LIFT!  
ELECTRIC TRAVEL!**

### AVAILABLE IN 6 MODELS

LOW LIFT PLATFORM • HIGH LIFT PLATFORM • PALLET  
HIGH LIFT FORK • TRACTOR • TIN PLATE

**WRITE FOR DETAILS**

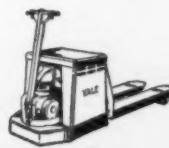
YALE now offers you a way to achieve greater handling economy and speed than ever before. It's the Worksaver—the electric truck that lifts by power, travels by power. It reduces material handling to little more than a walking and steering operation—takes "muscle money" off your payroll—saves time, saves effort, moves great tonnage per day without muscle strain.

The Worksaver does just what its name means—saves work. And in saving work, it also eliminates wasteful rehandling—cuts cost. The touch of a finger on the dual cam controls located under the handle grip provides two safe forward and reverse speeds. Just shift the convenient lever on the front of the battery box and the load is raised or lowered as desired. It's as simple as that!

Send, today, for all the facts about the powerful Yale Worksaver. Address: Yale & Towne Manufacturing Co., 4530 Tacony St., Phila. 24, Pa.

## WORKSAVER *Electric Lift Trucks*

CUT PRODUCTION COST... SAVE TIME... SAVE EFFORT... PROMOTE SAFETY



KRON INDUSTRIAL SCALES • HOISTS—HAND AND ELECTRIC • TRUCKS—HAND LIFT AND ELECTRIC



## On the spot for supplies?



Get'em fast  
by Air Express



You get supplies and equipment the fastest possible way when you specify Air Express. This speedy service makes hay out of shipping time—delivers you what's needed in hours instead of days.

Your shipment travels at speeds up to five miles a minute by Air Express. Because Air Express goes on all flights of all Scheduled Airlines, no time is lost waiting for loads to accumulate. Regular use of Air Express keeps your business running in high gear — helps give customers better service. Frequent flights to and from points overseas make foreign shipping problems simple, too.

### Specify Air Express—it's Good Business

- Low rates — special pick-up and delivery in principal U.S. towns and cities at no extra cost. • Moves on all flights of all Scheduled Airlines.
- Air-rail between 22,000 off-airline offices.
- Direct air service to and from scores of foreign countries.

Just phone your local Air Express Division, Railway Express Agency, for fast shipping action . . . Write today for Schedule of Domestic and International Rates. Address Air Express, 230 Park Ave., New York 17. Or ask for it at any Airline or Railway Express Office. Air Express Division, Railway Express Agency, representing the Airlines of the U.S.



1927—20TH YEAR OF GETTING THERE FIRST!—1947

(Continued from page 210)

special manufacturing technique, the announcement states. The steels have been tested and approved under both laboratory conditions, and have shown hardenability equal to or greater than more highly alloyed grades now in use, it is claimed. They are said to have improved carburizing characteristics, to be easier to anneal, and to have improved machinability.

### HAND ELECTRIC BAG CLOSER DISTRIBUTED BY BEMIS BRO.

The Dave Fischbein Co. of Minneapolis, manufacturers of industrial sewing machinery, has appointed Bemis Bro. Bag Co., with its many strategically located sales divisions and offices, exclusive distributor of a new hand electric filled bag closer.



Bag closer in operation

The machine weighs less than eleven pounds, including full cone of thread. Designed and constructed exclusively for bag closing, it operates from any AC or DC 110 volt line, and is ideally suited for closing cotton and burlap, as well as most kinds of paper bags. It will close about one hundred bags an hour, with tight and uniform stitches . . . four to the inch.

Requiring no skill, operators have only to guide the machine, holding bag in one hand and the closer in the other. A switch on the handle makes starting and stopping possible with a flick of the thumb.

### DO'S AND DON'TS OF PUNCH PRESS OPERATION

A new booklet, titled "Punch Pointers", has been announced by Allied Products Corporation, Richard Brothers Division, 4640 Lawton Ave., Detroit 8, Michigan. It is written as a sample, concise reminder of the "do's and don'ts" that have an important bearing on proper punch press set-up and operation, and the proper care and use of R-B Interchangeable Punches and Dies. It is illustrated in an interesting cartoon style and the text is brief and easily understood.

Copies are available without charge and will be supplied in quantities where distribution is desired throughout the press departments of any plant.

# REACH FOR THE RIGHT TOOL . . . IN A HAND TOOL SET *by New Britain!*



The right Tool serves like an extra hand. In shop and factory maintenance, on tough jobs in tight places, the proper Tool can save the day for you — make work go faster, easier, safer. That's why New Britain packs so much utility into its amazing Sets: *These Hand Tool assortments were matched by professional mechanics!* New Britain offers you a choice of more than 50

carefully selected Hand Tool Sets. Or, start with a basic Set and build your own assortment. Here's variety in size and type to meet your needs — *precisely!* Your Jobber will be glad to show you the New Britain Line of positive knuckle and job insurance. Ask him TODAY! The New Britain Machine Co., New Britain, Conn.

The complete  
New Britain Line  
for Automotive,  
Aircraft, General  
Maintenance &  
Production Needs  
is sold by lead-  
ing Jobbers.

# New Britain

GREATER STRENGTH • BETTER FIT **HAND TOOLS**



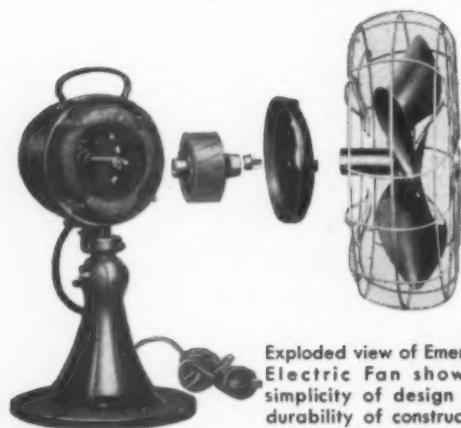
## One Reason Why EMERSON-ELECTRIC FANS Give You Years of Trouble-Free Service

Emerson-Electric 12" and 16" A. C. Oscillators have an oil-tight, dust-proof, "sealed" bearing. The rotor revolves on a sturdy, stationary, "built-in", hollow-steel, case-hardened shaft. This has been an exclusive feature of Emerson-Electric Fans for more than 45 years.

Engineered by one of America's pioneer fan manufacturers, these sturdy breeze makers are backed by a 5-year Factory-to-User Guarantee, and built to give you quiet, dependable, trouble-free service.

Wherever there's air to be moved, there's an Emerson-Electric Fan to do the job. See your Emerson-Electric Dealer today — or write for Folder No. 419.

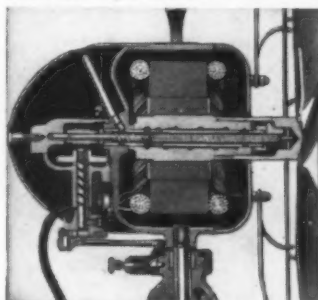
**THE EMERSON ELECTRIC MANUFACTURING CO.**  
St. Louis 21, Mo.



Exploded view of Emerson-Electric Fan showing simplicity of design and durability of construction.



Case-hardened, hollow-steel shaft, on which the rotor revolves, is securely anchored in the motor frame.



Spiral oil grooves in the rotor core and the spiral oil conveyor attached to the floating worm shaft keep the oil circulating continuously, providing "forced feed" lubrication.

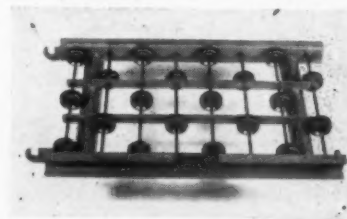


Finger-tip oscillation adjusting case. Simply turn the rim of the adjusting case to the desired range of oscillation, from 90° down to stationary position.

**EMERSON ELECTRIC**  
MOTORS · FANS · APPLIANCES

## SAGE PRODUCING LINE OF GRAVITY WHEEL CONVEYORS

A standard size gravity wheel conveyor line, designed to handle approximately 90% of all standard, box, carton and case sizes, is now being manufactured by the Sage Equipment Co., 30 Essex St., Buffalo 13, N. Y.



Sage gravity wheel conveyor

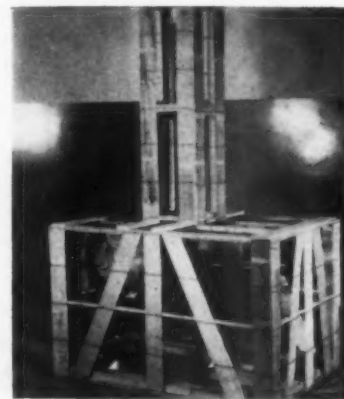
The new equipment has been found to meet the requirements for most conveyor specifications, according to the manufacturer. Use of ball-bearing, zinc-plated wheels instead of rollers is said to insure "straight-line" travel for all rigid containers.

Lightweight, welded-steel construction gives the five or ten foot conveyor sections mobility. The sections are hooked together without the use of tools and can be handled by one man, it is claimed. In addition to the standard 14" model, the company also produces 12" and 18" wheel conveyors. The wheels contain seven precision-ground  $\frac{1}{4}$ " ball-bearings.

1 1 1

## WIREBOUND CRATE ENGINEERED TO ODD-SHAPED PRODUCT

An example of modern packaging technique is shown in the illustration. Note how materials and weight are saved by designing container to a specific need.



Specially designed crate

Quickly assembled, wrap-around mat protects base, and "B-Style" (patented by General Box Co.) construction provides added strength and rigidity.

Heavy wood members are used in the base of the crate to provide added support and keep the product's casters off of the floor. This added weight also helps to counter-balance the shipment since the product is somewhat topheavy.

The new issue of "The General Box" contains other interesting and unique examples of modern packaging. Copy available on request. General Box Co., 500 N. Dearborn St., Chicago, Illinois.



# How a DISSTONEER recommended a band saw blade that cut 46 times as much metal as before

## BEFORE

Running Time:  
3 min. per blade  
Production:  
1/2" per blade

## AFTER

Running Time:  
2 hours per blade  
Production:  
23" per blade



Disston Flexible Back, Metal Cutting Band Saws are made in all standard widths from 1/8" to 1"—in coils or joined ready for immediate use. Sizes 1/8" to 1/2" are supplied in 100-foot coils, packed in the handy Disston Safety Reel.

It sounds almost unbelievable, but here is the story: A manufacturer was cutting 1/4" to 1/2" steel for use in templates and dies. It was an unusually tough and hard-to-cut steel. It was equally tough on the band saw blades, which had to be changed every 3 minutes, with a down time of 10 minutes—an average loss of 44 minutes of productive time out of every hour. And to this loss was added the tremendous waste of band saw, for 300 feet of blade were used up during each 8-hour shift.

A Disstoneer\*, who studied the operation, recommended the use of a Disston Flexible Back Metal Cutting Band Saw 1/4" x 14 Teeth per inch, to be mounted on the same machine and run at the same speed. It cut 46 times as much metal between changes, which were made only once in two hours. The results were a big saving of time, greatly increased production and a considerable reduction in blade costs.

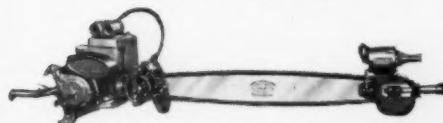


\*DISSTONEER—a man who combines the experience of Disston leadership and sound engineering knowledge, to find the right tool for you—to cut wood, to cut metal and other materials—and TO CUT YOUR COST OF PRODUCTION—not only on special work but on ordinary jobs as well.

Your sawing operation may be different, but whatever it is there is a Disston saw that will do it better, faster and at less cost. If you cut big timbers, you will be particularly interested in the

## DISSTON CHAIN SAW

with Mercury Gasoline Engine



With a Disston Chain Saw you can cut through heavy timbers—hard or soft woods—in but a fraction of the time it takes with a cross-cut saw. It is sturdily built, and can be taken anywhere, for it is self-contained. Cuts in almost every position, for it can be adjusted to 90 degrees right or left and 180 degrees for inverted bucking.

Supplied in 6 lengths: 24 to 84 inches. 11 h.p. Mercury Gasoline Engine; positive type, multiple disc clutch; die cast engine cylinders; die cast cooling fan; aircraft type magneto; fuel filter; air filter; Disston Steel cutting chain. Immediate delivery.

Disston Chain Saw—Pneumatic: furnished in 3 1/2 and 5 h.p.; 2 and 3 foot capacities. Immediate delivery. Write for particulars.

**HENRY DISSTON & SONS, INC., 833 Tacony, Philadelphia 35, Pa., U. S. A.**

# Among the ASSOCIATIONS

## Successful Leaders Stress Purchasing Essentials as Basis for Programming

THE trend toward returning to fundamentals in local meeting programs, clearly discernible from a symposium recently conducted among association officers and program chairmen by PURCHASING Magazine is ready for further encouragement and development as another official business year gets under way.

It is evident from the opinions of these successful officers that the tendency should and can become a normal condition with every association, not merely a vague ideal that everyone talks about and no one does anything to realize. They are agreed that the coordination of energetic leadership and enthusiastic membership cooperation can turn the trend into an accepted order of business. All the pep talks, surveys and detailed plans in the world are useless unless members are convinced of the vital importance of industrial procurement, the key part they play in the field, and the almost unlimited opportunities it offers them. That belief, or understanding, is, to make a serious play on words, fundamental to getting back to fundamentals.

### Sticks to Essentials

Whatever the methods employed, the sentiment expressed throughout is to stick to the essentials of purchasing. L. A. Lowe, of the New England association, puts it concisely: "In building our association programs we follow on a local scale the general pattern set by national conventions. Through our numerous activities, which include commodity committees, afternoon conferences, forums, plant visits, and evening meetings, we consider matters of interest to purchasing men, ranging from technical details through the broadest implications of procurement." The same point is made again and again by leaders who have been conspicuously successful in programming. They bring out the diversified nature of purchasing, and the varied and interesting subjects that apply to it. Market analysis, inventories, manufacturing processes, new materials and equipment, the relationship between sales departments and purchasing departments, marketing problems, and organization are a few of the many topics they suggest as being important and helpful for discussion by local associations.

Checking attendance at different types of meetings has proved of great assistance to some associations in preparing future programs. As expressed by Joseph E. Parsons, of the St. Louis association,

"the only fair way to judge each association is by attendance." Many successful association executives state that greater concentration on subjects of major and general interest in purchasing has consistently outdrawn subjects involving irrelevant material. In the same vein, one association used the questionnaire method to find out members' likes and dislikes, and adjusted the programs accordingly when sentiment favored "subjects of use to our members." Adherence to that policy brought increased attendance. It is pointed out by these leaders that good attendance at meetings registers favorably with top management, indicating to the many companies who pay membership dues that the associations have something constructive to offer in return.

The practical conclusions set forth in the symposium by those who have worked long and successfully to produce programs that attract and aid members, are here presented to help those now taking over the duties of preparing meetings for their associations.

The round-table or "family type" of discussion has probably produced better and livelier meetings—and more return engagements—than any other type, it appears from their experience. Free discussion on problems pertinent to purchasing—and the purchasing agent without a

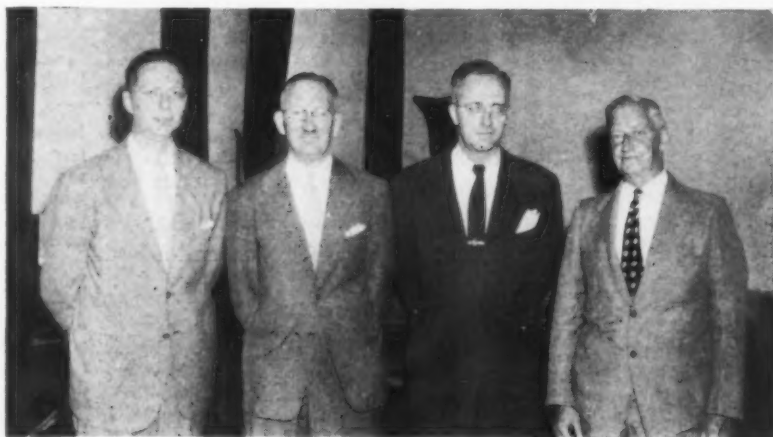
problem just doesn't exist—has been widely accepted as of great help in creating interest and stimulating attendance. The exchange of individual opinions and experiences is apparently both popular and beneficial to those engaging in it. Nobody knows all the answers, but everyone has a few to give, and many he wants to receive. One variation used with success was the "Information Please" type of program, which bore out the widely held contention that the more individual participation, the greater the interest in meetings.

### Choose Good Moderator

Emphasized in many replies is the necessity for choosing an alert, live-wire moderator for these types of discussion. It is pointed out that the man who can help or make others speak out, ask questions, and volunteer information, not only leads them to increase their knowledge and self-confidence, but usually uncovers a mine of topics for future meetings. Their purpose is to bring to the fore those bright but retiring fellows who will outline and intelligently discuss an important particular problem in purchasing with a couple of friends at the dinner table, only to finish with the remark, "I'd like to hear that thrashed out at one of our meetings. But oh, no, I couldn't do it—somebody else would be much better at it." As one officer observed, many men are not qualified public speakers, but the limitations thus imposed might be gradually overcome by giving everyone a chance to talk. Practice is the first and

(Please turn to page 222)

## New York Officers at Installation



Recently elected officers of the New York Association of Purchasing Agents are shown just before they were installed at the June meeting. Left to right: Donald H. Lyons, Johns-Manville

Corp., 1st vice-president; David M. Meeker, Paraffine Companies, Inc., president; G. W. Howard Ahl, Columbia Ribbon & Carbon Mfg. Co., 2nd vice-pres.; Edward B. Fielis, treasurer.

## Quick Low-Cost Way to Load a Freight Car



Big palletized unit loads, handled by powerful battery fork trucks make light work of car loading and unloading — save time, muscle and money. In such work the 10% extra capacity construction pioneered by Philco is a distinct advantage—provides more work energy to handle more tons and load more cars per shift. Write for specification data on Philco extra capacity types XL, XVL and the long-life "Philco Thirty".

**PHILCO**  
STORAGE BATTERIES





## Highlights of NIGP Second Annual Conference and Products Exhibit

"Doing a Big Job Better" is the slogan adopted for the Second Annual Conference and Products Exhibit of the National Institute of Governmental Purchasing, which is scheduled to be held at the Penn-Top Roof and Salle Moderne, Hotel Pennsylvania, New York, N. Y., September 7 to 11, inclusive.

In an open letter to Public Purchasing Agents, James Clark McGuire, (Port of New York Authority), General Conference Chairman, states that "The progress has been planned to help you and your colleagues 'Do A Big Job Better'."

The conference commences with registration Sunday noon, September 7th, meeting of the board of directors, and an informal dinner and entertainment for the early arrivals. The conference program is as follows:

Monday, September 8: Opening of products exhibit, and the conference. Activities includes speakers on "How You Can Save More of the Taxpayer's Money"; inspection of products exhibits with special events during the morning and afternoon; luncheon speaker, and a panel discussion on "Making it Easier to Do Business with Government."

Tuesday, September 9: "Improving Governmental Buying"—a series of papers on: "You and Your Profession," "Making Public Purchasing your Career," "Your Place in the Governmental Administrative Machine," "Good Public Relations are Important to You," "Your National Assets"—a report on the status of Federal surplus war property. Inspection of Products Exhibit—special events at 11:00 and 4:00. Luncheon with guest speaker. "The Money You Spend"—a paper on the origins and characteristics of Tax funds. "Economic Trends"—a paper on commodity and price indices and trends. "Institutional

Buying"—a paper on the specialized problems of purchasing for institutions.

Wednesday, September 10: "Purchasing for the United Nations"—a paper on the procurement problems of an international organization. "Public Purchasing Practices and Procedures"—a report on a national survey by NIGP, followed by panel discussion by governmental buyers. Inspection of products exhibit—special events at 11:00 and 2:00. Annual business meeting of NIGP. Adjournment of conference and exhibit.

Thursday, September 11: Visits to public agencies and other points of interest in and around the City of New York.

For the Ladies: Fashion show and visit to beauty salon. Visit to tower of the George Washington Bridge and Tea in Palisades Park overlooking the Hudson River and the New York Skyline. Visit to the headquarters of the United Nations at Lake Success, Long Island.

Albert H. Hall, 730 Jackson Place, N.W., Washington 6, D. C., is executive director, NIGP.

### SOUTHWESTERN CONFERENCE TO BE HELD IN OCTOBER

The first annual Southwest Purchasing Conference, sponsored by associations in District 2 of the National Association of Purchasing Agents, will be held in Tulsa, Okla., October 2 and 3, at Tulsa Hotel. Associations comprising District 2 are: Dallas, Fort Worth, Houston, Oklahoma City, Texas Panhandle, Wichita, and Tulsa.

Ben R. Newbery, Lone Star Gas Co., Dallas, is general chairman of the affair, and W. I. James, Stanolind Oil & Gas Co., Tulsa is program chairman. Other

committee chairmen are: Virgil M. Lewis, Dowell, Inc., hotels; H. M. Logan, Rockwell Manufacturing Co., registration; K. G. Manning, The Texas Co., reception; F. P. Nopper, Gulf Oil Corp., banquet, O. E. McClatchey, resolutions; H. M. Casgrove, Tulsa, J. R. Brown, Dallas, and C. S. Worley, Oklahoma City, publicity.

### SOUTHEASTERN CONFERENCE SET FOR OCTOBER 16 & 17

The fourth annual conference of the Purchasing Agents in the Southeast, sponsored by the Seventh District, N. A. P. A., will be held at the Kentucky Hotel, Louisville, Ky., on Thursday and Friday, October 16 and 17. The date was set at an all-day meeting of committee chairmen for the conference, held June 14, under the chairmanship of William M. Kerrick, Director of Purchasing, Mengel Co., Louisville.

Every phase of the conduct of the fall conference was discussed in detail and each committee chairman was briefed on the scope of his job. A tentative budget was set up, registration details were ironed out, entertainment was outlined, and the program and publicity were discussed.

The hotel committee reported that it had the assurance of the management of the Kentucky Hotel that every effort would be made to accommodate all registrants for the convention there, and that it probably would not be necessary for anyone attending to be housed elsewhere.

Under the chairmanship of T. A. Corcoran, Purchasing Agent, Louisville Courier-Journal and Times, the program for the conference is shaping up well. One of the leading speakers already committed is Albert J. Browning, vice-president and Director of Purchasing for Ford Motor Co. Mr. Browning has made an enviable name for himself as a speaker in purchasing agent circles and recently addressed the National Marketing Conference of the United States Chamber of Commerce at Chicago. Another feature of the program will be an information panel in which all in attendance will be invited to participate. Entertainment will be provided for the women attending, and delegates are being urged to bring their wives.

### IRELAND NAMED PRESIDENT OF CANADIAN COUNCIL

George A. Ireland, National Paper Goods Ltd., Hamilton, has been elected president of the Council of Canadian Purchasing Agents' Association for 1947-48. Other officers are: Garnet T. Dickson, Goodyear Tire & Rubber Co. of Canada Ltd., New Toronto, immediate past president; J. Frank Stephenson, Kraft Containers Ltd., Hamilton, treasurer; Charles F. Fullerton, 175 Jarvis St., Toronto, secretary.

Representing member associations are: G. J. Deignan, Consolidated Lithograph Mfg. Co. Ltd., and John Crawford, Sun Life Assurance Co. of Canada, the

(Please turn to page 220)

## Milwaukee Association's New Officers



Here are the new officers of the Milwaukee Association of Purchasing Agents, Milwaukee, Wis., for the 1947-48 association year. Left to right are:

Norman Showalter, treasurer, West Bend Aluminum Company, West Bend, Wis.; Edward L. Block, national direc-

tor, Unit Drop Forge, Div. Fuller Manufacturing Co.; Frederic G. Syburg, president, Chain Belt Company; Clifford H. Dawley, vice president, Ampco Metal, Inc., and W. Howell Pritchard, secretary, Kearney & Trecker Corporation, all of Milwaukee.

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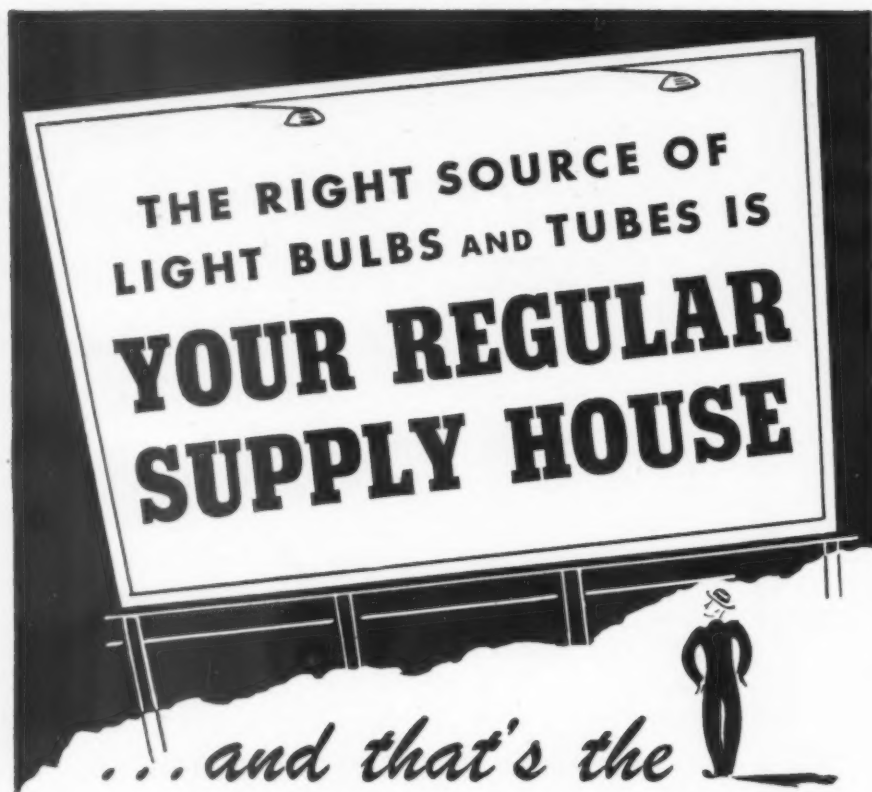
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*Lynn, Massachusetts*  
A DIVISION OF CONSOLIDATED ELECTRIC LAMP CO.



(Continued from page 218)

Montreal association; George McDowell, Robt. Simpson Co. Ltd., and Harvey T. Sprang, Frankel Bros. Ltd., the Toronto association; E. M. Fletcher, Robinson Industries Ltd., and J. F. Stephenson, the Hamilton district association; A. G. Henderson, Scroggins Shoe Co. Ltd. and Roy A. Orr, W. C. Wood Co. Ltd., the Central Ontario association; R. P. Hunt, Somerville Ltd. and R. W. Northey, Fine Papers (London) Ltd., the Western Ontario association; W. D. Howe, Eaton-Wilcox-Rich Ltd. and J. B. Cheyne, MacLeod's Ltd., the Winnipeg association. George J. Deignan was named to the Advisory Publications Committee.

#### CINCINNATI ASSOCIATION ELECTS KESSLER

Harold R. Kessler, Cincinnati Shaper Co., was elected president of the Cincinnati Association of Purchasing Agents at the June 10th meeting. Other new officers are: William R. Biehl, Brunhoff Mfg. Co. and Joseph Mullen, vice-presidents; Gilbert W. Riches, Philip Carey Manufacturing Co., secretary; Milton C. Blerch, American Tool Works Co., treasurer. New trustees are: Harry Berlage, William R. Biehl, Milton C. Blerch, Earl F. Jung, Andrew Lincoln, Joseph Mullen and Gilbert W. Riches.

The annual stag party of the association was held at the Shoe and Leather Club on July 26. The first meeting of the 1947-48 season has been announced for August 19 at the Kenwood Country Club. Golf, lunch and dinner will be featured.

#### NEW OFFICERS ELECTED BY WINNIPEG ASSOCIATION

New officers of the Purchasing Agents Association of Winnipeg for the coming year are: H. C. Barker, Parkhill Bedding Ltd., president; B. K. Sprung, Manitoba Power Commission, vice-president; C. Clark, Crescent Creamery Ltd., national director; J. B. Cheyne, MacLeod's Ltd., member of the Canadian Council; J. Tapley, Vulcan Iron Works Ltd., secretary; J. M. Hanson, City Hydro System, treasurer.

#### NORTHWESTERN PENNSYLVANIA ASSOCIATION ELECTS WRHEN

A. E. Wrhen was elected president of the Purchasing Agents Association of Northwestern Pennsylvania at the last regular meeting of the 1946-47 season, held June 12 at the Emery Hotel, Bradford. Other new officers are: H. L. Kaness, vice-president; F. G. Cruickshank, secretary; E. E. Bonsper, treasurer; L. M. Danner, John Henderson, directors; H. W. Ledebur, national director; E. C. Walker, alternate national director.

The major part of the meeting was devoted to the continuation of the association's educational program. "What Price Loyalty To Suppliers" was the subject of

(Please turn to page 224)



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**Model M**  
**HEAVY DUTY HIGH SPEED HOIST**  
Capacities from ¼ ton up

- **96% EFFICIENCY**  
conserves worker energy  
and increases productivity
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simplifies maintenance
- **63% LESS WEIGHT**  
yet definitely a heavy  
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LUBRICATION**  
simplifies servicing...prolongs  
life...maintains efficiency
- **Plus HERC-ALLOY CHAIN**  
America's First and Safest  
Steel Load Chain

The Cyclone Model M Heavy Duty Hoist is entirely new, completely different. Size and weight have been greatly reduced, and strength and durability greatly increased through the use of today's stronger alloys of steel and Alcoa aluminum. Efficiency and ease of operation have been increased to new high levels through the use of precision ball bearings at all rotating points. The many advantages of this unusual hoist are being demonstrated daily on-the-job by thousands of Cyclone Model M's already in service. Ask your distributor to show it to you.

● New type load brake gives smooth, positive control at all times...exceptionally valuable in spotting or assembly work. Famous CM "Herc-Alloy" double duty alloy steel load chain is standard equipment on all models. The 1-ton model weighs only 35 pounds, has a minimum headroom of only 13¾".

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(Continued from page 216)

most necessary step in learning to speak to more than one person, and the informal type of meeting offers the best place to start.

Organization of the association into groups of men in allied businesses—each to sponsor one or two meetings a year—has been used successfully by several large associations. The groups meet separately and arrange programs of direct interest to them and of general interest to the association at large. This has also been found to present an opportunity for greater individual participation, inasmuch as a man who simply cannot be persuaded to conduct a large forum on some topic with which he is well acquainted usually will not hesitate to contribute his efforts and knowledge to a small group with mutual interests and problems.

Many of the associations have a yearly "Executives' Night" meeting, when executives of association member firms are invited to attend, which draws heavy attendance. The president of one large association states that the meeting does much to promote good will for the association and its members, and is looked forward to by many leading business men in the area.

Obtaining consistently competent speakers on topics related to purchasing for the more formal types of meetings is generally conceded to be difficult, but facilitated by good planning. As one official states, a definite policy on choosing speakers and arranging for their subject matter should be set up and strictly adhered to. Combining the group's member-

ship, inviting local business or industrial men whose opinion or knowledge has an important bearing on purchasing, and arranging to exchange member speakers with neighboring associations, are methods advocated by several successful presidents. Continually emphasized throughout the symposium is the need for planning, rather than haphazard scrambling at the last minute, with the subsequent danger that the guest speakers' subject has not the remotest connection with purchasing.

Varying conditions such as size, locality, and composition of membership of various associations, are reflected in the ideas and comments of their leaders. The smaller associations, for instance, appear to concentrate on the open discussion type of meeting, while some of the larger use it for forum meetings preliminary to the evening session which features one speaker. The Carolinas-Virginia association normally holds four meetings a year, each lasting two days. They have tried to balance the program by giving equal time for technical and professional papers and discussions, general and industry group forums, and recreation and entertainment. Commodity discussions are universally approved, being made the subject of the evening on some occasions, but usually conducted as a special feature before the general meeting.

H. F. Jones, of the Philadelphia association, points out that an excellent navigational guide is the code of "Principles and Standards of Purchasing" as set forth many years ago by the National Association of Purchasing Agents. It is

(Please turn to page 242)

## Principles and Standards of Purchasing Practice

Advocated By

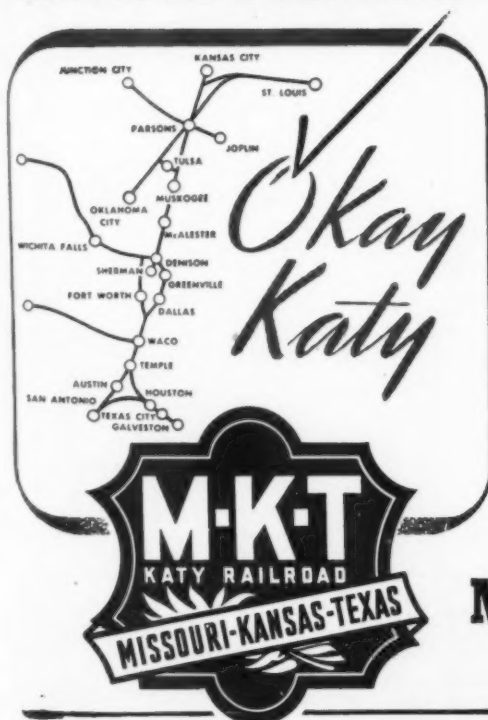
### National Association of Purchasing Agents

- (1) To consider, first, the interests of his company in all transactions and to carry out and believe in its established policies.
- (2) To be receptive to competent counsel from his colleagues and to be guided by such counsel without impairing the dignity and responsibility of his office.
- (3) To buy without prejudice, seeking to obtain the maximum ultimate value for each dollar of expenditure.
- (4) To strive consistently for knowledge of the materials and processes of manufacture, and to establish practical methods for the conduct of his office.
- (5) To subscribe to and work for honesty and truth in buying and selling, and to denounce all forms and manifestations of commercial bribery.
- (6) To accord a prompt and courteous reception, so far as conditions will permit, to all who call on a legitimate business mission.
- (7) To respect his obligations and to require that obligations to him and to his concern be respected, consistent with good business practice.
- (8) To avoid sharp practice.
- (9) To counsel and assist fellow purchasing agents in the performance of their duties, whenever occasion permits.
- (10) To cooperate with all organizations and individuals engaged in activities designed to enhance the development and standing of purchasing.

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(Continued from page 220)

the discussion by C. H. Holden, chairman of the Education Committee. A. H. Ewing was discussion leader, and practically everyone in attendance voiced an opinion on the subject. E. C. Walker, national director, commented on the forthcoming Sixth District conference, and reported on the New York convention.

Past president H. W. Ledebur was presented with a diamond-studded pin by E. C. Walker, on behalf of the entire group, in recognition of his outstanding service during the past year.

1 1 1

#### TRI-STATE ASSOCIATION CHOOSES NEW OFFICERS

New officers for 1947-48 were chosen by the Tri-State Purchasing Agents Association at its annual meeting, June 17 at the Kanawha Hotel, Charleston, W. Va. The following officers were elected: F. M. Fuller, Knickerbocker Stamping Co., Parkersburg, president; H. M. Begg, The McBee Co., Athens, O., national director; Edward Emrick Jr., Ashland Oil & Refining Co., Ashland, Ky., 1st vice-president; I. J. T. Green, Huntington Boiler & Supply Co., Huntington, W. Va., 2nd vice-president; A. A. Meyer, 329 Eighth Ave., Huntington, secretary-treasurer. Named to the board of directors: (2-year term) W. R. Beavan, C. C. Londerree, J. Y. Smythe; (1-year term) F. A. Bellamy, H. C. Bowden, C. C. Cole.

Retiring president Harry M. Begg and Edward Emrick, Jr. reported on the New York convention.

1 1 1

#### C. T. MOATES NEW PRESIDENT OF ALABAMA ASSOCIATION

C. T. Moates, Mathew Electric Supply Co. has been elected president of the Purchasing Agents Association of Alabama. Other officers elected are: H. A. Wilson, Long-Lewis Hardware Co., 1st vice-president; Newnan M. Yielding, Birmingham-Southern College, 2nd vice-president; Charles R. Cornic, Birmingham Board of Education, treasurer; Grenville N. Wood, Lamson & Sessions Co., secretary; and T. Hoyt Prater, national director.

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#### TAX ACT DISCUSSED AT RHODE ISLAND MEETING

The Rhode Island "Sales and Use Tax Act", was the subject of a special meeting of the Rhode Island Purchasing Agents Association held in the State House, Providence, on June 26. Judge Edward L. Leahy, tax administrator, discussed the act, which makes practically all materials purchased outside the state, with the exception of items for resale or used in products for resale, taxable under the "Use" feature. The importance of the legislation to purchasing agents led the association to call the meeting, so that members could familiarize themselves with its provisions.

(Please turn to page 228)



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## WOMEN PURCHASERS ASSN. ELECTS OFFICERS

The Association of Women Purchasers, a newly formed division of the Purchasing Agents of Northern California, recently elected the following officers for the coming year: Edna M. Baumann, Haussermann Mining Interests, Philippine Islands, San Francisco, president; Pauline A. Matthews, Pacific Coast Engineering Co., Alameda, vice-president; M. Cecelia McConnel, City of Berkeley, secretary - treasurer; Pearl E. Lane, Moore Dry Dock Co., Oakland, and Hilda Graves, Albert Wright Screw Machine Products, Emeryville, directors.



Edna M. Baumann

The women were admitted to limited membership by the parent association in February of this year. In addition to the officers, the following are charter members of the group: Maxine M. Boak, General Cable Corp., Emeryville; Dorothy F. Conner, Central Sheet Metal & Roofing Co., Oakland; Etta G. Herman, Herrick Iron Works, Oakland; Mabel Schick, American Manganese Steel Division, American Brake Shoe Co., Oakland; Madeleine E. Schiffman, Ets-Hokin & Galvan, San Francisco; Mabel Smith, County of Alameda, Oakland; Anna Weimer, The Samuel Merritt Hospital, Oakland; and Iola Wells, Iola Equipment & Mfg. Co., Inc., Oakland.

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## GOVERNMENT PURCHASING DISCUSSED AT WASHINGTON

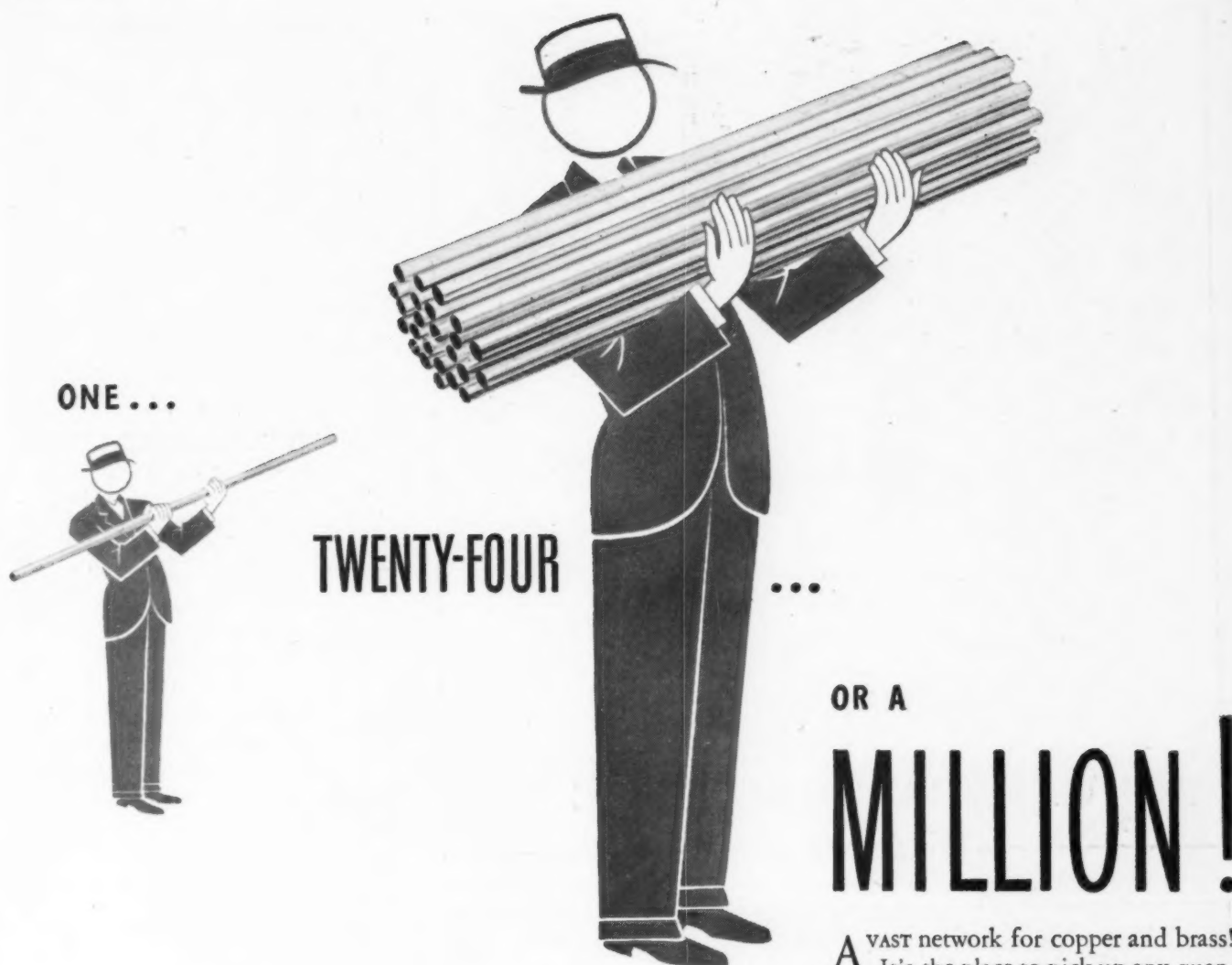
"Special Phases in Purchasing for Government" was discussed by W. M. B. Freeman, deputy director of the Treasury Department's Bureau of Federal Supply, at a meeting of the Government Purchasing Agents Association of Washington on June 10.

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## LOUISVILLE CHOOSES NEW OFFICERS

Recently elected officers of the Purchasing Agents Association of Louisville for the coming year are: J. T. Kinberger, Gulf Refining Co., president; Harold B. Borders, Reynolds Metals Co., 1st vice-president; C. E. Schardein, F. S. Schardein & Sons, 2nd vice-president; L. G. O'Connor, O'Connor & Raque, secretary; Elmer T. Meyer, B. F. Avery Co., assistant secretary; L. A. Kirchofer, Commonwealth Life, treasurer; E. V. Bulleit, Wood-Mosaic Co., national director. T.

(Please turn to page 230)



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It takes a long series of processes, developed and perfected over a period of years, to make a thing as faultless in material and form as a Strom Metal Ball. Worked to a tolerance of fifty millionths of an inch, their outstanding qualities of finish, sphericity and precision have made Strom Balls the standard of industry. Strom Steel Ball Co., 1850 So. 54th Ave., Cicero 50, Illinois.

**Strom BALLS  Serve Industry**

Largest Independent and Exclusive Metal Ball Manufacturer

(Continued from page 228)

A. Corcoran, Louisville Courier-Journal & Times; William M. Kerrick, The Mengel Co.; and L. M. Hartman, American Creosoting Co., were elected directors.

Members and guests of the association traveled across the river to the New Albany Country Club in Indiana for the association's annual outing on June 17. Member William L. Larkin had the low gross golf score, 81, to take first prize. A number of golf prizes and door prizes were distributed. Arrangements for the outing were handled by a special committee composed of Elmer Meyer, Bob Carroll and Clarence Schardein.

1 1 1

#### PITTSBURGH ASSOCIATION HOLDS SUMMER PARTY

The annual summer party of the Purchasing Agents Association of Pittsburgh was held at the Edgewood Country Club on June 18. H. J. Zeck was in charge of the afternoon golfing session, and A. J. Bodenham directed bridge for the ladies. An informal dinner, followed by dancing, was held in the evening.

1 1 1

#### ROY A. ORR HEADS CENTRAL ONTARIO

Roy A. Orr, The W. C. Wood Co., Guelph, was recently elected president of the Purchasing Agents Association of Central Ontario for 1947-48. Harold Levandusky, Newlands & Co. Ltd., Galt, was chosen vice-president. Members of the executive committee are: Alford Thaler, Kitchener Public Utilities Commission; Ross Grigg, Leland Electric Canada Ltd.; A. G. Henderson, Scroggins Shoe Co. Ltd.; Ernest Willis, Canadian General Rubber Co. Ltd.; Harold Current, Kaufman Rubber Co. Ltd.; J. V. Wittig, Weber Hardware Co. Ltd.; M. C. Miller, Waterloo Mfg. Co. Ltd.; and Roy McGinns, McBrine Co. Ltd.

1 1 1

#### CONVENTION DATE SET FOR CALIFORNIA GROUP

Donald A. Magill, president of the California State, County and Municipal Purchasing Agents Association, and Director of Purchases for the City of Glendale, has announced that the association's 1948 convention will be held at the Mission Inn, Riverside, Calif., on February 5, 6 and 7.

1 1 1

#### ESSEX-KENT ASSOCIATION ELECTS NEW OFFICERS

The following officers were elected for 1947-48 at a recent meeting of the Purchasing Agents Association of Essex-Kent and district: E. J. Marnell, Canadian Top & Body Corp., president; Harry A. Cole, Bendix Eclipse of Canada Ltd., and B. Wright, Ontario Steel Products Co. Ltd., vice-presidents; L. F. Turner, Essex Wire Corp. Ltd., secretary; J. Gold, John Wyeth & Bro. (Canada) Ltd., treasurer. Directors are: G. J. (Please turn to page 232)

# "Pittsburgh"

## SPECIALISTS IN CHEMICALS DERIVED FROM COAL, TAR AND BY-PRODUCT GAS

Unlocking the chemical treasure house of coal, and extracting and recovering its multifold components for the uses of science, industry and commerce, is the business of Pittsburgh Coke & Chemical Company.

Here modern plant facilities, earnest and foresighted research, favorable shipping location and advantageous sources of supply combine to assure you of dependable, uniform, quality chemicals.

Expanding volume and range of products and increasing capacities make *Pittsburgh* better able to serve you than ever. Our technicians will welcome an opportunity to discuss your needs.

### "PITTSBURGH" Coke and Chemical Products

AROMATIC HYDROCARBONS:  
BENZOL, TOLUOL, XYLOL, NAPHTHALENE

TAR ACIDS: PHENOL, CRESOLS

SULPHURIC ACID: ALL GRADES

TAR, PITCH and CREOSOTE

SULPHATE OF AMMONIA

TAR BASES: PYRIDINE, PICOLINES

SODIUM CYANIDE • SODIUM THIOCYANATE

ACTIVATED CARBONS

#### OTHER PRODUCTS:

NEVILLE COKE—EMERALD COAL—PIG IRON—  
GREEN BAG CEMENTS—CONCRETE PIPE—LIME-  
STONE PRODUCTS—IRON ORE

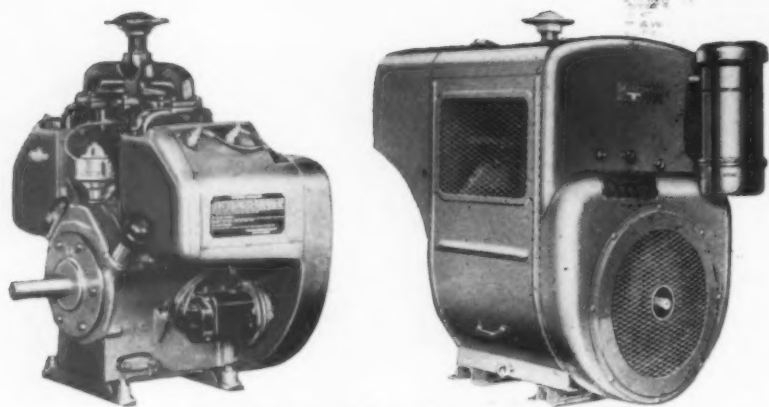
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Turning up 20.5 hp. at 2200 R.P.M. the Model VE-4 WISCONSIN Standard Air-Cooled Engine (left) and the Model VE-4 Complete Power Unit (right), can always be depended upon for continuous, heavy-duty operation in any kind of service, on any kind of equipment within their power range.

Positive, trouble-free AIR-COOLING; dynamically balanced crankshaft mounted on tapered roller bearings, front and rear; extra-long connecting rods; light weight pistons . . . these are features that you can bank on for top performance.

Specify Wisconsin Air-Cooled Engines for YOUR equipment  
... for most hp.-hours of service, at the lowest overall cost.

**WISCONSIN MOTOR Corporation**  
MILWAUKEE 14, WISCONSIN

World's Largest Builders of Heavy Duty Air-Cooled Engines

## HOSE FOR USE IN ANY INDUSTRY!

Light, Strong, Flexible

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SIZES 1½ inches to 24 inches. Write for full information on this all-purpose hose. Various Flexaust types, accessories, and other hose types also available:

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If it's not in the catalog, we'll design it for you.

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**FIBRE PRODUCTS MFG. CO.**  
30-32 WEST 13th ST., N. Y. 11

(Continued from page 230)

Oldershaw, Union Gas Co. of Canada Ltd.; W. J. Hobbs, Canadian Industries Ltd.; George Nixon, Somerville Ltd.; T. J. Gray, Sunnen Products Co. Ltd.; R. P. Jones, Brunner Mond Canada Ltd.; D. Richardson, Johnson-Turner Co. Ltd.

Other officers are: W. D. Howe, Eaton-Wilcox-Rich Ltd., national director; E. J. Marnell, member of the Canadian Council; D. S. Whyte, City of Windsor Purchasing Agent, and J. Dalrymple, Dominion Forge & Stamping Co. Ltd., auditors.

1 1 1

### CAROLINAS-VIRGINIA GROUP HOLDS SUMMER MEETING

The Carolinas-Virginia Purchasing Agents Association held a two-day summer meeting at the Manor, Asheville, N. C., on June 27-28. More than 100 purchasing agents attended the affair, which featured Clayton Rand, noted Gulfport, Miss. editor as a speaker. C. F. Williams of Durham, president, was in charge.

Roy C. Haberkern, R. J. Reynolds Tobacco Co., presided at a forum on the first day of the session. M. Bayfield, executive secretary of the American Wholesale Coal Association, discussed the coal situation, and Bennet Chapple Jr., assistant to the vice-president of U. S. Steel Corp., spoke on "Tomorrow We Go On Trial" on the second day.

1 1 1

### NIAGARA DISTRICT ASSN. ELECTS NEW OFFICERS

Recently elected to head the Purchasing Agents Association of the Niagara District for 1947-48 were: A. E. Farmer, Canadian Ohio Brass Ltd., president; Geo. D. Qua, Niagara Plumbing Supply Co. Ltd., national director; A. R. Draper, North American Cyanamid Ltd., and C. H. Randall, Atlas Steels Ltd., vice-presidents; W. R. Clark, Spirella Co. of Canada Ltd., secretary; Alex Yule, Burgess Battery Co., treasurer. Chosen for the executive committee: H. Cluderay, Hayes Steel Products Ltd. and J. G. Sexton, McKinn Columbus Chain Ltd.

1 1 1

### NORTHERN CALIFORNIA ASSOCIATION ELECTS

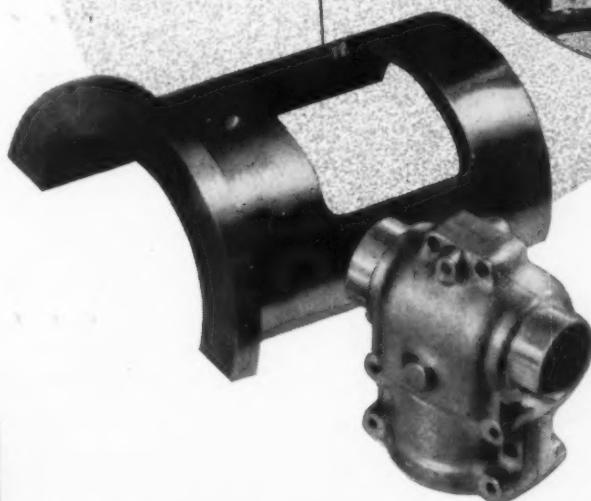
At the annual meeting of the Purchasing Agents Association of Northern California, held in San Francisco on June 19, the following officers and directors were elected for 1947-48: Roscoe R. Bush, Pacific Coast Aggregates, Inc., president; Samuel T. Dickey, Castle & Cooke, Ltd., 1st vice-president; Paul J. Sampson, General Metals Corp., Oakland, 2nd vice-president; Arthur J. Melka, Hydraulic Dredging Co., Oakland, secretary; H. C. Goldstone, Shell Oil Co., treasurer. Directors: Lawrence E. Hobart, State of California; Bernard E. Gobel, Steel Tank & Pipe Co., Berkeley; W. T. Lambert, Southern Pacific Co.

(Please turn to page 234)



**{ N·B·M BRONZE PARTS  
BETTER BRONZE PARTS**

**THE EXTRA DAYS WE SPEND ON RESEARCH  
MEAN EXTRA YEARS OF SERVICE FOR YOU**



**You get purer alloys—denser grain—  
closer tolerances—more uniformity—  
better performance when you specify**

**N·B·M BRONZE PARTS**

**We put more service into them—  
you get more service out of them**



**AMERICAN**

**Brake Shoe**

**COMPANY**

**NATIONAL BEARING DIVISION**

**ST. LOUIS • NEW YORK**

**PLANTS IN: ST. LOUIS, MO. • PITTSBURGH, PA. • MEADVILLE, PA. • JERSEY CITY, N. J. • PORTSMOUTH, VA. • ST. PAUL, MINN. • CHICAGO, ILL.**



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SUBSIDIARY OF DODGE MFG. CORPORATION, MISHAWAKA, INDIANA

(Continued from page 232)

Leonard S. McCall, Columbia Steel Co.; A. M. McKelligon, Matson Navigation Co.; H. V. McLaughlin, Jr., Pacific Electric Motor Co., Oakland; Harold R. Morrison, Union Oil Co of California. Charles Warner, General Electric Co., was elected to the finance committee for a five-year term.

1 1 1

### OFFICERS INSTALLED BY BRITISH COLUMBIA ASSN.

Installation of officers for the coming year featured the regular meeting of the Purchasing Agents Association of British Columbia, held June 10 at the Hotel Vancouver. Assuming their new duties were: R. A. Baker, president; Alex Dunbar, vice-president; A. J. Shaw, secretary; H. G. Miller, treasurer. Retiring president Brad Watson, who could not attend, will be installed as national director at the group's next regular meeting, September 9.

Mr. Baker gave a report on the recent New York convention, and personal impressions of the conference by George Hazard, who had not returned from the trip, were read by Alex Dunbar. All members received the new certificates of membership. A new member, L. J. Dupuis, Alaska Pine Purchasing Agency Ltd., was introduced.

1 1 1

### KENDRICK BURNS HEADS NEW ENGLAND ASSOCIATION

Kendrick Burns, S. D. Warren Co., Boston, Mass., has been elected president of the New England Purchasing Agents Association for the 1947-48 association year. Other officers are Daniel G. Donovan, Peperell Manufacturing Co., vice-president; John R. Fuller, Sylvania Electric Products, Inc., treasurer. H. J. Graham, 80 Federal St., Boston, is executive secretary.

1 1 1

### MARSHALL PEASE PRESIDENT OF DETROIT ASSOCIATION

Marshall Pease, Jr., Detroit Edison Co., is the new president of the Purchasing Agents Association of Detroit. Other officers recently chosen are: W. Edward Vokes, Goddard & Goddard Co., 1st vice-president; Arthur D. Hummel, Frederick B. Stevens, Inc., 2nd vice-president; Andrew DeCarlo, treasurer.

1 1 1

### STANDING COMMITTEES APPOINTED BY MEMPHIS ASSN.

The Memphis Purchasing Agents Association held its first meeting at which the newly elected officers presided on June 18. President Martin Sunderland appointed the standing committees for the year, with the following as chairmen: Clark Thornton, membership; E. R. McCalla, reception; Ed Fohrman, program; Aaron Brenner, house; H. B. Day, auditing; and Jane Inez Gordon, publicity.

W. E. Rier, vice-president for Dis- (Please turn to page 236)

*We'll be...*

**LOOKING FOR YOU**

*at*



**IN CHICAGO**



## **\*ACCURACY HEADQUARTERS**

will be the Pratt & Whitney Booth at the Machine Tool Show. You won't want to miss a long visit at A. H. Q.

You won't be able to miss it—for the P&W Booth will be one of the largest at the show . . . 6000 square feet of floor space crammed with P&W Accuracy at work. Toolroom equipment will include the newest in jig boring practice, surface grinding, gear grinding, thread milling. A whole section will contain P&W Lathes—"the standard by which all fine lathes are judged." Of course the Keller machines will be in full operation—doing everything from small inold and die cavities up to Kellering very large automotive dies. The full line of P&W Die Sinkers will be at work plus an exhibit of die jobs done at savings you can't afford to miss. Here also will be Kellersflex machines and attachments demonstrating the phenomenal cutting abilities of the newest Keller Carbide Burs. You'll find taps, dies, milling cutters, reamers—all the newest cutting tools including carbides. And of course you'll find the latest P&W Gages, engineered into efficient setups for modern quality control or selective assembly.

There, too, you'll meet the men who engineer P&W Accuracy into the tools you use. They'll be available for consultation on your precision problems. And there will be comfortable chairs where you can sit and talk over your shop problems.

We'll be looking for you at A.H.Q. Please feel welcome to come early and often and to stay as long as you can.



Booth No. 55 in the northeast corner.

# **PRATT & WHITNEY**

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\* To get the number of fastenings you need . . . order by quantity. But more important, to get the accuracy and holding power you need . . . order by quality.

All Chicago Screw fastenings are of the highest quality, manufactured from the finest materials and unsurpassed for strength, accuracy and clean, true threads.

The knowledge, facilities and experience acquired during 75 years of manufacturing fine threaded products has resulted in a line of fastenings ideally suited to all modern production methods.

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### CHICAGO "Safety Plus" line includes:

- Socket Head Cap Screws
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- Square Head Dog Point Set Screws
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### Complete line includes:

- Hexagon Head Cap Screws
- Square Head Cup Point Set Screws
- Headless Set Screws
- Fillister Head Cap Screws
- Flat Head Cap Screws
- Taper Pins
- Milled Studs
- Semi-Finished Hexagon Nuts
- Semi-Finished Hexagon Castellated Nuts

(Continued from page 234)

trict Seven, gave a report on N. A. P. A. Executive Committee activities and on the New York convention. James Pidgeon, national director, gave his regular report and outlined plans for the July dance. Two new members, Allen Miller, Continental Can Co., and E. T. Burns, Swayne Latham Tire Co., were welcomed.

1 1 1

### HAMILTON ASSOCIATION NAMES NEW OFFICERS

The Purchasing Agents Association of the Hamilton District has elected the following new officers for 1947-48: R. J. Allan, The Wallace Barnes Co. Ltd., president; H. F. Witten, N. Slater Co. Ltd. and Hugh M. Everett, The John Bertram Sons Co. Ltd., vice-presidents; C. H. Roper, Aerovox Canada Ltd., treasurer; A. W. Dyer, Reid Press Ltd., corresponding secretary; E. R. Johnson, United Carr Fastener Co. Ltd., recording secretary; J. Frank Stephenson, Kraft Containers Ltd., member of the Canadian Council; E. M. Fletcher, Robinson Industries, Ltd., national director.

Members of the executive committee are: G. R. Appleford, Consolidated Specialties Ltd.; C. Barlow, Norton Co. of Canada Ltd.; John Stott, Mercury Mills Ltd.; H. F. Eastcott, Scarfe & Co. Ltd., Branford.

1 1 1

### NEW OFFICERS NAMED BY TULSA ASSOCIATION

New officers of the Purchasing Agents Association of Tulsa for 1947-48 are: G. C. Heidinger, Stanolind Oil & Gas Co., president; F. P. Nopper, Gulf Oil Corp., 1st vice-president; C. W. Wallace, Mid-Continent Petroleum Corp., 2nd vice-president; J. C. Nicholson, Tretolite Co., secretary-treasurer; K. G. Manning, The Texas Co. national director; H. M. Cosgrove executive secretary; E. R. Welch assistant secretary. V. M. Lewis, Dowell, Inc.; H. M. Logan, Rockwell Mfg. Co.; and G. H. Schwenker, United Supply & Mfg. Co., are directors.

A discussion on "Field Purchase Procedure" and reports on the recent New York convention featured the June meeting of the association.

1 1 1

### WASHINGTON ASSOCIATION HEARS TALK ON GOVT. BUYING

C. A. Crosser, executive secretary of the Seattle Municipal League was the guest speaker at the last regular meeting before the summer vacation of the Purchasing Agents Association of Washington on June 12. Mr. Crosser discussed the work of his group in cooperation with the association's Centralized Purchasing Committee to promote better governmental buying. The general discussion portion of the meeting included reviews of Haney's "Business Trends" by George Kumpf, and McGill's "Business Conditions and Commodity Prices" by

(Please turn to page 238)

**NO MORE  
WEIGHT**  
*but*  
**A LOT MORE  
STRENGTH**



## with **REPUBLIC HIGH STRENGTH STEELS**

Specially designed for hauling rock and other heavy materials, this 15-ton quarry-type rear dump truck needs great strength and stamina to withstand the hard usage common to off-the-highway haulage. The body must be tough and must stand up under the impact and abrasion of rock during loading from large shovels—during traveling and dumping. And, Republic High Strength Steels provide these qualities, *without excessive weight*.

Republic's three different High Strength Steels—Republic ALDECOR, Republic COR-TEN and Republic DOUBLE

STRENGTH—were developed for severe usage such as this. They provide not only high strength—a minimum yield point of 50,000 pounds—but also four to six times the atmospheric corrosion-resistance of ordinary structural steel in the unstressed condition.

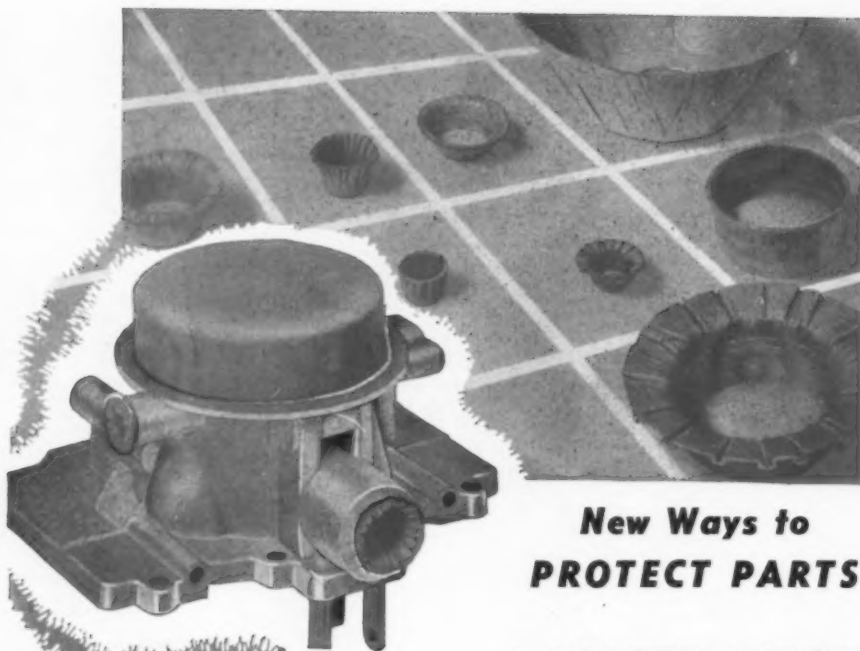
Designers and builders of mobile equipment who want to increase strength *without increasing weight*—or who want to *save weight* without sacrifice of durability—should investigate the possibilities of Republic High Strength Steels. Booklet 445 will bring you the full story. Write for your copy . . . and for metallurgical assistance, too, if you desire.

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**HIGH STRENGTH STEELS**  
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Other Republic Products include Carbon, Alloy and Stainless Steels—Sheets—Plates—Pipe—Bars—Wire—Bolts, Nuts and Rivets

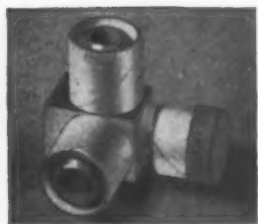


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PROTECT against damage to threads . . .  
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Made in sizes and shapes to  
meet every need and purpose.

PLUGS and SLEEVES obtainable in diameters  
 $\frac{1}{8}$ " up

CAPS obtainable in diameters from  $\frac{1}{4}$ " up

SPECIAL SIZES or SHAPES made with no die  
charge where quantities warrant.

## ATTRACTIVE PRICES

based on immense pro-  
duction capacity —  
quick deliveries

FOR EXPERIENCED COUNSEL,  
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PRODUCTION PLANTS also at Plymouth, Wis., Ogdensburg, N. Y., Chicago, Ill., Detroit, Mich., Jamesburg, N. J.  
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New York Sales Office—1186 Broadway, Room 223

IN CANADA—The Cleveland Container Canada Ltd., Pressett, Ontario

(Continued from page 236)

William Fischer. Reports on the N. A. P. A. New York convention were also given.

The annual fishing trip of the association was held at Indian Beach, Camano Island on June 28-29, under the chairmanship of Ralph Miller. The annual family picnic of the association will be held on July 26. R. W. Dickinson is chairman of the affair.

1 1 1

## SPRINGFIELD ASSOCIATION INSTALLS NEW OFFICERS

The Purchasing Agents Association of Springfield, O., installed the following new officers at a meeting held June 11 in the Shawnee Hotel: J. G. Laihr, president; G. H. Eggleston, vice-president; Robert L. Milner, secretary; Willard R. Bush, treasurer; Ralph E. Weadon, national director; Harvey L. Ault, local director; Robert O'Meara, out of town director. The national director at large, or the retiring national director's new office, will be filled each year by the national director of the preceding year so that his advice and counsel may be available at all times.

The association recently lost two members by death, Ed Montanus, a past president, and F. E. McKenzie. Memorials will be prepared and sent to Mrs. Montanus and Mrs. McKenzie.

1 1 1

## CENTRAL N. Y. ASSOCIATION VISITS I.B.M. PLANT

The Purchasing Agents Association of Central New York visited the plant of International Business Machines Corporation at Endicott on June 24. Luncheon was held at the I. B. M. Homestead, and golf was played on the I. B. M. course in the afternoon. The regular June meeting, and dinner, were held in the evening at the Binghamton Country Club.

1 1 1

## INDIANAPOLIS ASSOCIATION INSTALLS AT ANNUAL OUTING

Installation of officers of the Purchasing Agents Association of Indianapolis took place at the association's annual party on June 12 at the Highland Golf and Country Club. The program included golf for men and bridge for women in the afternoon, followed by dinner and dancing in the evening.

1 1 1

## VAUTIER NEW PRESIDENT OF MONTREAL ASSOCIATION

Hedley H. Vautier, McGill University, was recently chosen president of the Purchasing Agents Association of Montreal for the coming year. Other officers are: G. J. Deignan, Consolidated Lithograph Mfg. Co. Ltd., national director; John Crawford, Sun Life Assurance Co. of Canada, member of the Canadian Council; C. E. Stiles, Canadian Broadcasting Corp., vice-president; Hugh P. Millar, Canadian Pacific Railway Co., secretary; F. G. Samis, Northern Electric Co. Ltd.,

(Please turn to page 240)



# Only the **SIDE** of a V-Belt **TOUCHES** the Pulley

Diagram of V-Belt  
in Sheave Groove

## The **SIDE** Does ALL the Gripping-- ---- Naturally it **GETS** the WEAR!

Every ounce of load a V-Belt carries must first be picked up by the sides of the belt. Clearly so, because *only* the sides touch the pulley! The sides do all the GRIPPING—they get all the WEAR against the sheave-groove wall. The sides pick up the load. They transmit that load to the belt as a whole. And then, once more, the sides—and the sides alone—grip the driven pulley and deliver the power to it.

No wonder you have always noticed that the sidewall of the ordinary belt is the part that **WEARS OUT FIRST**.

## Now See How the Patented **CONCAVE SIDE** ★ SAVES Sidewall Wear and Lengthens Belt Life!

Naturally, since the sidewall is the part that wears out first, anything that prolongs the life of the sidewall will lengthen the life of the belt.

The simple diagrams on the right show exactly why the ordinary, straight-sided V-Belt gets excessive wear along the *middle* of the sides. They show also why the Patented Concave Side greatly reduces sidewall wear in Gates Vulco Ropes. That is the simple reason why your Gates Vulco Ropes are giving you so much longer service than any straight-sided V-Belt can possibly give.

## ★ Longer Sidewall Wear is MORE IMPORTANT NOW Than Ever Before!

Now that Gates **SPECIALIZED** Research has resulted in Super V-Belts capable of carrying much heavier loads—up to 40% *higher horsepower ratings* in some cases—the sidewall of the belt is called upon to do even more work in transmitting these heavier loads to the pulley. Naturally, with heavier loading on the sidewall, the life-prolonging Concave Side is more important NOW than ever before!

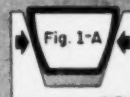


The **CONCAVE SIDE**  
is a GATES PATENT

Straight Sided  
V-Belt

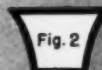


How Straight Sided  
V-Belt Bulges  
When Bending  
Around Its Pulley



You can actually feel the bulging of a straight-sided V-Belt by holding the sides between your finger and thumb and then bending the belt. Naturally, this bulging produces excessive wear along the middle of the sidewall as indicated by arrows.

Gates V-Belt with  
Patented Concave  
Sidewall



Showing How Con-  
cave Side of Gates V-  
Belt Straightens to  
Make Perfect Fit in  
Sheave Groove When  
Belt Is Bending Over  
Pulley.



No bulging against the sides of the sheave groove means that sidewall wear is evenly distributed over the full width of the sidewall—and that means much longer life for the belt!

THE GATES RUBBER COMPANY, DENVER, U. S. A. "World's Largest Maker of V-Belts"

# GATES VULCO ROPE DRIVES

Engineering Offices  
and Jobber Stocks

IN ALL INDUSTRIAL CENTERS

of the U. S. and  
71 Foreign Countries

*Gates*

THE MARK OF  
SPECIALIZED RESEARCH

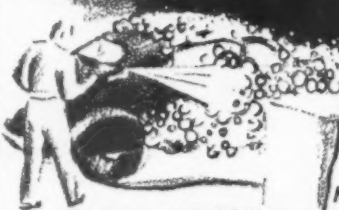
## MIRACLES IN CHEMICAL CLEANING BY

# TURCO



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YOUR  
TYPEWRITER**

... IN SPECIALLY DEVELOPED  
TURCO BATH. COMES OUT  
SPARKLING CLEAN WITHOUT  
BRUSHING OR DISASSEMBLING.



**TURCO SHAMPOO  
FOR CARS**

... CUTS WASHING TIME, ELIMINATES  
WIPING, CLEANS MORE THOROUGHLY.

**LIKE MAGIC-  
WASH OFF  
PAINT WITH  
WATER  
... AFTER APPLYING  
NEW TURCO STRIPPER**

These are but a few of the *many* ways Turco serves industry. Whatever your cleaning problem—big or small, out-of-the-ordinary or routine—there's a specialized Turco product, utilizing famous Turco Surface Chemistry, that solves it easier, faster, more economically. A skilled Turco Field Engineer is as close as your phone.



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Canada: D. W. Beane & Company Limited, 751 Victoria Square, Montreal 1

(Continued from page 238)

treasurer. Members of the executive committee are: D. W. Stuart, Stuart, Busby & Asgo; George Bourgois, Universite deMontreal; R. Bruce Reid, Canadian Copper Refineries Ltd.; P. S. Quinn, Anglo-Canadian Pulp and Paper Mills Ltd.

1 1 1

### WALTER J. WOLF HEADS BUFFALO ASSOCIATION

Walter J. Wolf, Purchasing Agent for Columbus-McKinnon Chain Corp., Tonawanda, was recently elected president of the Purchasing Agents Association of Buffalo. Other new officers are: Charles F. Genger, 1st vice-president; Norman R. Rossow, 2nd vice-president; Chester M. Bell, secretary; and Ernie Bursch, treasurer. Officers were elected directors.

Other new directors are: John C. Pfisterer, Elmer C. Ehlers, Frank G. Kager and H. D. Grew. Jack S. Rutherford was elected national director.

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### FORT WAYNE ASSOCIATION OFFICERS INSTALLED

New officers of the Fort Wayne Association of Purchasing Agents, headed by L. C. Wakefield, president, were installed at a meeting in the Chamber of Commerce building on June 23. Other officers installed were Noah S. Tilman, vice-president; T. A. Burns, secretary, and Robert Colfax, treasurer. Gerald R. Smith is national director. The board is comprised of Jack Printz, retiring president; Herbert W. Buchler, Mr. Smith, J. Ray Laughlin and E. A. Steinhauer.

1 1 1

### WESTERN ONTARIO NAMES OFFICERS

Elected to head the Purchasing Agents Association of Western Ontario for 1947-48 are: R. W. Northey, Fine Papers (London) Ltd., president; R. F. Hunt, Somerville, Ltd., vice-president; H. B. Arndt, London Concrete Machinery Co. Ltd., secretary; W. C. Pink, Empire Brass Mfg. Co. Ltd., treasurer; Miss Jane Metcalfe, George White & Sons Co. Ltd., and Hanley Millar, Weatherhead Co. of Canada Ltd., auditors.

Committee chairmen are: J. A. Ros-siter, P. U. C. & L. & P. S. Railway; R. R. Glover, University of Western Ontario; M. P. Bellis, Sparton of Canada, Ltd.; and W. H. McLaren, London Life Insurance Co. W. E. Pickford, McCormicks Ltd., is historian.

1 1 1

### GOLF FEATURED AT RHODE ISLAND OUTING

The Rhode Island Purchasing Agents Association held its annual outing at the Pawtucket Golf Club on June 24. Numerous golf prizes and door prizes were distributed. The affair included a luncheon before the golf tournament and a dinner in the evening.

(Please turn to page 242)



**PRODUCT IMPROVEMENT THROUGH  
DURONZE\* ALLOYS**

Smith-Blair, Inc., South San Francisco, Calif., manufacturers of the flexible coupling, repair clamp and bolts illustrated above, say:

"We have selected DURONZE III for our bolts because of its UNUSUALLY HIGH STRENGTH and EXCELLENT CORROSION RESISTANCE."

## Duronze III for High Strength, Corrosion Resistance, Dependability

Bolts used for the repair clamps illustrated must be dependable. They are frequently subjected to severe tension, corrosive conditions, moisture and other factors which would cause failure of ordinary materials in a short time.

Duronze\* III, a high-strength silicon aluminum bronze, is superior to ordinary metals in this and in many other engineering applications.

From a design standpoint, Duronze III rod is 50% stronger than annealed brass (85,000 psi annealed) and 9% lighter. Therefore, strength can be gained and dead weight saved in many cases by using this alloy. Since it is also 10% lighter in weight than silicon bronze, 10% more nuts or screw machine items can be cut from rod of equal weight.

From a manufacturing standpoint, free-machining Duronze III is very practical because it can be cut from 50% to 75% as fast as free-cutting brass. Furthermore it can be hot-

forged readily. Such forgings are much stronger than hot-forged brass or silicon bronze. Applications include many kinds of high-strength screw machine parts, nuts, bolts, gears, pinions, wire and cable connectors, marine and building hardware and other similar items.

Consider Duronze III for improving the performance and reliability of your product. Contact the nearest Bridgeport office and write for your free copy of "Machining Stronger, Tougher Alloys."

\*Reg. U. S. Pat. Off.



**BRIDGEPORT BRASS COMPANY**  
BRIDGEPORT 2, CONN. • Established 1865

Mills at Bridgeport, Conn., and Indianapolis, Ind.  
In Canada—Noranda Copper and Brass Limited, Montreal

BRASS • COPPER • BRONZE • DURONZE • SILICON BRONZE • ALUMINUM BRONZE  
CUPRO NICKEL • NICKEL SILVER • Rod • Strip • Wire • Tubing



**Call Your Local Office for Warehouse Service**  
Warehouse and Jobber Stocks Available for Prompt Delivery

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Atlanta 3, Georgia...701 Volunteer Building  
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Grand Rapids 2, Mich...510 Assoc. Com. Bldg.

★ Houston 1, Texas...2216 Walker Avenue  
Indianapolis 4, Indiana...Circle Tower Bldg.  
Jacksonville, Florida, 5133 Appleton Avenue  
★ Los Angeles 12, California, 130 S. Hewitt St.  
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★ San Francisco 3, California...1155 Bryant St.  
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*Brass-Bronze-Copper-Duronze*

STRIP

ROD

WIRE

TUBING

**BRIDGEPORT BRASS**





## CULLMAN *Stock Design* SPROCKETS

**will do the job—Better!**

With 2,000 types to select from—you are almost certain to find just the size you need for practically every transmission requirement—*ready for immediate delivery*. Cullman Sprockets—produced by fast, low-cost, high-precision methods—assure top operating efficiency. "Specials," too, are quickly available—made up by exclusive Cullman methods and specialized equipment.

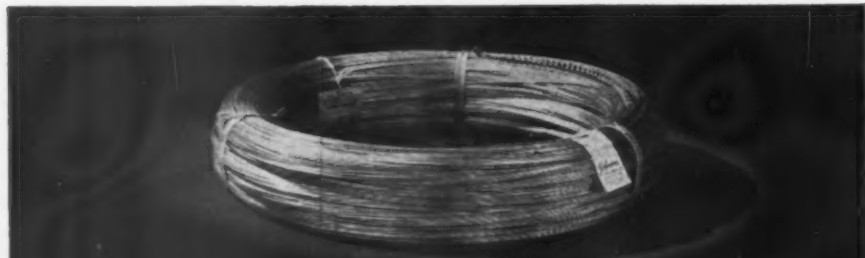


Write today for free catalog containing useful data and helpful facts for sprocket users. It lists dimensions.

### CULLMAN WHEEL COMPANY

1352-P Altgeld Street

Chicago 14, Illinois



Aircraft Wire—tinned or alloy coated and galvanized

Armature Binding Wire—tinned or alloy coated

Belt Hook Wire—tinned, galvanized or alloy coated

Bobby Pin Wire

Brush Wire—round scratch brush, tempered and untempered. High strain white liquor finish

Card Wire—tempered, round, angular, single convex, double convex

Curtain Spring Wire—round, flat

Fish Leader Wire

Flexible Shaft Wire—Music Wire quality

Hard Drawn Spring Wire

Heddle Wire

Hose Reinforcement Wire

Mandolin Wire

Music Wire, bright, tinned or alloy coated

Piano Wire, perfected quality

Rope Wire, bright or galvanized, mild plow, plow, improved plow

Seal Wire • Stainless Steel Wire

Stapling Wire • Stitching Wire

Tire Wire—bronze plated

Your nearest Johnson branch will give you prompt service.

# JOHNSON

STEEL AND WIRE COMPANY, INC.  
WORCESTER 1, MASS.

NEW YORK AKRON DETROIT CHICAGO LOS ANGELES TORONTO

(Continued from page 240)

On the committee were: Bob Brennan, Berney Byrne, Ken Douglas, Gene Hemlett, Bill Hunt, Bill Miller, Dick Moeller, Wallace Smedley, Ev. Taylor, Mahlon Wallace and Arnot Hirst.

1 1 1

### ROCHESTER ASSOCIATION HOLDS ANNUAL PARTY

The annual "June Jamboree" of the Purchasing Agents Association of Rochester was held at the Livingston Country Club on June 25. James Cooney, who was host last year, did the honors again this year. An afternoon golf tournament was featured, with dinner being held in the evening.

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### EASTERN N. Y. ASSOCIATION HOLDS JUNE OUTING

The Purchasing Agents Association of Eastern New York held its annual June outing at the White Sulphur Springs Hotel, Saratoga Lake, on June 21. Golf, baseball, darts, croquet, horseshoe pitching and other forms of entertainment diverted the members and their guests for the afternoon. Dinner was served in the evening.

The association has tentatively scheduled its September outing for the third Thursday of the month at Picard's Grove.

1 1 1

### Leaders Stress Essentials

(Continued from page 222)

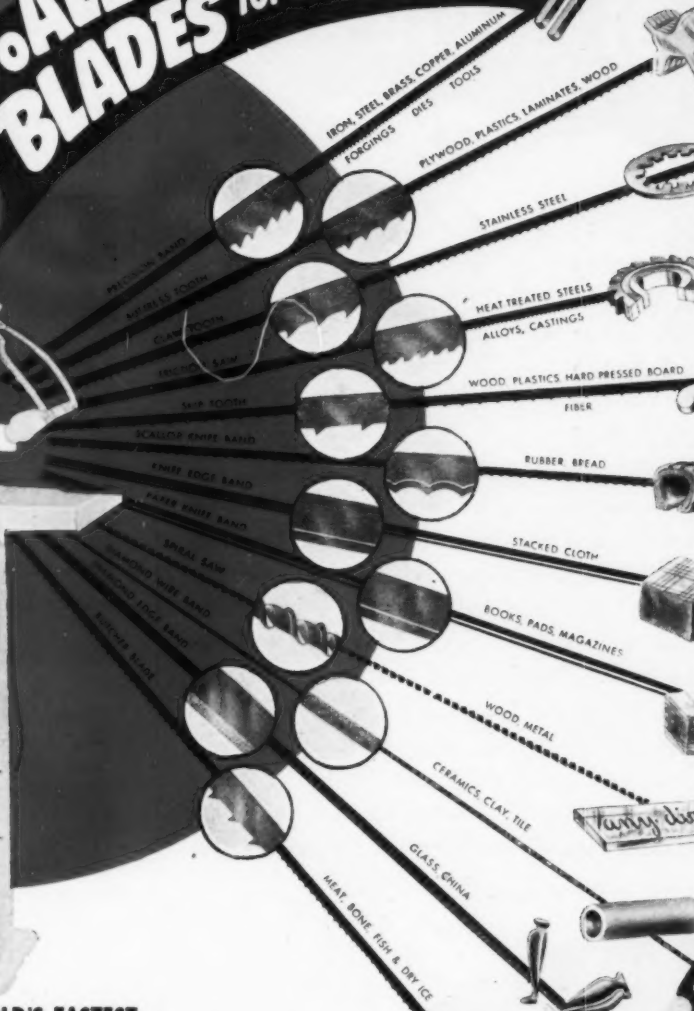
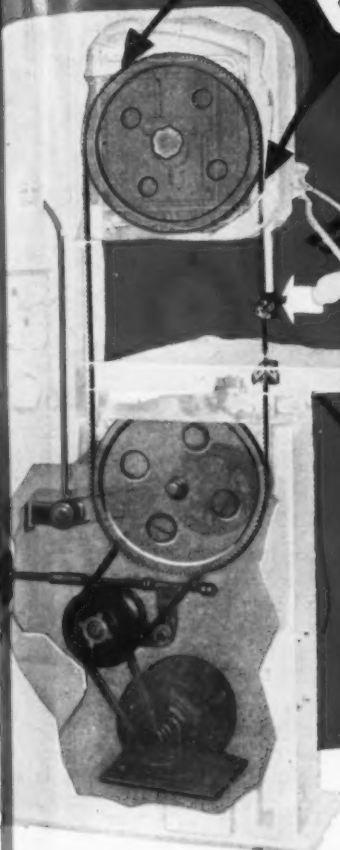
printed in conjunction with this article to serve as a keystone in the development of ideas for intelligent, well-planned meetings that will assist the ambitious purchasing agent in elevating the standards of his profession and fostering his own well-being.

What about the ever-present question of social evenings, the informal, non-business get togethers that so many associations sponsor? The important fact pointed out by several officials is that social evenings should not be abolished, but should be put in their proper place, where they would not be confused with the serious business of the association. The consensus is that given a definite time of their own, and labeled as purely social affairs, they can be integrated into the year's activities without leaving a member wondering whether the next meeting will treat him to a display of card tricks or a worthwhile discussion on purchasing problems.

On the subject of plant visits, conducted by some associations in conjunction with their meetings, George L. Wilson, of the Alabama association, sums up by saying, "there is much to be learned by the average purchasing man and woman in visiting manufacturing and distributing facilities, and the contacts with production and sales executives are enlightening." He adds that it encourages good fellowship among members to make the visits in a body, representing the association.

# YOU CAN *Bandsaw* ANYTHING

## DoALL BLADES for every purpose



**CONTOUR SAW IS WORLD'S FASTEST METAL-REMOVING MACHINE**



Patent No. 2,255,577  
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Other Patents Pending.

"Strip-out" blade containers save users' time, protect fingers, keep blade undamaged. Saw is pulled through slot to desired length and snapped off. Footage of blade left always visible through slot.

No matter what you have to cut - from the softest to the hardest materials - you can do it better and faster by bandsawing with one of DoALL's special saw blades. Hundreds of sizes for width and pitch; various sets and thicknesses. Welded lengths to fit your machine or 100-ft. coils in DoALL-pioneered containers for quick, easy and safe dispensing. Hard-tooth blades need no resharpening.

No Price Increases on DoALL Saw Blades

**The DoALL Co. DES PLAINES, ILL.**

SALES AND SERVICE STORES IN KEY CITIES  
REPRESENTATIVES IN 56 COUNTRIES



# Shanties are out of style

It's good business to keep your small utility buildings out of the shanty class. You can do it at low cost and get much better structures by specifying standard ARMCO STEELOX Buildings.

This way your utility buildings, tool houses, and other buildings have the two big advantages of a permanent structure—long life and low upkeep—plus easy portability. Should conditions change, they can be taken down and reassembled in another location.

STEELOX Buildings are adaptable to many requirements. They can be quickly wired and may be insulated, or may be left uninsulated without affecting weather-tightness. All-steel construction is an excellent fire-barrier, while interlocking joints help keep out dust and vermin. The galvanized PAINTGRIP surface of STEELOX can be painted immediately—assures long paint life.

STEELOX Buildings are prefabricated in a wide range of standard sizes. They are easy to handle and are erected quickly by unskilled labor.

Write for prices and information on standard ARMCO STEELOX Buildings. Armco Drainage & Metal Products, Inc., 705 Curtis Street, Middletown, Ohio,



## ARMCO STEELOX BUILDINGS

### G. E. LAMP DEPARTMENT ANNOUNCES MAJOR CHANGES

Major changes in the home office sales organization of General Electric Lamp Department, effective July 1, have just been announced by M. L. Sloan, G. E. vice president and general manager of the company's lamp department, with headquarters at Nela Park, Cleveland.

Included in the changes are the discontinuance of the department's Eastern and Western sales divisions in favor of two newly created sales divisions. One of these is called General Sales Division; the other, Sales Operation Division



N. H. Boynton, Nela Park; P. D. Parker, general sales manager of General Sales Division; Fred J. Borch, manager of Sales Operation Division; D. A. Hopper, manager of Central Service Division.

Simultaneously announced are the promotions of several lamp department people, effective July 1, to higher posts in the department's sales setup. Included among those advanced are: N. H. Boynton; P. D. Parker; Fred J. Borch; and D. A. Hopper.

Mr. Boynton joins the staff of the Administration Division at Nela Park, Cleveland. Mr. Parker is now general sales manager of the General Sales Division. Mr. Borch is appointed manager of the newly created Sales Operation Division, and Mr. Hopper succeeds him as manager of the Central Service Division.

J. A. Amport, manager of the St. Louis Service District, is appointed manager of the Newark Service District. O. E. Bruton, manager of the Denver Service Station becomes manager of the St. Louis Service District, and R. C. Weiland of Atlanta has been named manager of the Denver Service District.

### AIR EXPRESS MARKS TWENTIETH ANNIVERSARY

Air Express, the pioneer air shipping service in the United States, will observe its 20th anniversary on September 1st. Organized air express had its beginning on September 1, 1927, when four air lines joined with the American Railway Ex-

(Please turn to page 246)



## ECONOMY

*in buying*

Every progressive business stresses good buying — the knack of getting the best ultimate dollar values from purchases.

**SUPERSTRONG** boxes and crates — "Bound with Steel" — are designed for good buying as well as for strength. They bring you substantial reductions in shipping weight, shipping space, storage space, assembly time, damage claims — all adding up to lowered shipping costs.

Good buyers will find it profitable to discuss their long range requirements with our shipping experts.



**RATHBORNE, HAIR AND RIDGWAY COMPANY**

1440 WEST 21st PLACE • CHICAGO 8, ILLINOIS

**PRODUCTION  
CASTINGS  
THAT MEET *Every*  
SPECIFICATION  
*Every* TIME...**

*Always call*  
**SUPERIOR**



## **SUPERIOR PRODUCTION CASTINGS**

**GRAY IRON • ALLOY IRON • ELECTRIC FURNACE IRON**

### **OFFER ALL THESE ADVANTAGES**

- ◆ **METALLURGICAL CONTROL**  
Superior's step-by-step control of the melt, assures highest quality of the finished product.
- ◆ **MACHINABILITY**  
Superior castings may be milled, drilled, turned and otherwise machined easily and economically.
- ◆ **ACCURACY TO SPECIFICATIONS**  
Superior experience and "know-how" assure castings which meet the requirements of the most exacting specifications.
- ◆ **UNIFORMITY**  
Superior castings offer consistent uniformity of grain structure and cross section density.
- ◆ **CLEAN SURFACE**  
Superior castings have clean, smooth surface.

**SUPERIOR FOUNDRY, INC.**  
3542 EAST 71st STREET • CLEVELAND 5, OHIO

**SUPERIOR**

**Michigan 3078**

(Continued from page 244)

press company—predecessor company of Railway Express Agency—to establish a nationwide air shipping service, with routes extending from Boston and New York to San Francisco and Dallas, Tex.

Over the 20-year span, air route mileage has been expanded from a skeleton-like 4500 miles covering 26 cities, to a network of 70,000 miles reaching more than 1,000 airport offices in the U. S. and Canada. Through international air express connections, world-wide air shipping service now reaches more than 60 countries.

Some 17,000 shipments were handled in 1928. In 1946, shipments reached a total of more than 3,000,000 weighing 53¾ million pounds. In 1927 the air-express rate on a 5-pound package from Boston to San Francisco was \$15, flying time 33 hours. Today the charge is \$3.68, flying time under 11 hours. Railway Express Agency now operates 23,000 express offices with 77,000 employees and a motor truck fleet of 18,000 vehicles.

1 1 1

### **MANHATTAN RUBBER AGAIN WINS N.A.A.N. ADVERTISING AWARD**

Manhattan Rubber Division, Raybestos-Manhattan Inc., Passaic, N. J. has received, for the fourth consecutive year, the Award of Excellence for its business paper advertising campaign, from the National Advertising Agency Network. The award was made at the fourteenth annual competition, held during the recent N. A. A. N. convention at French Lick, Ind. The company has received many other awards in previous years for its advertising and merchandising campaigns, and employee and public relations programs.

1 1 1

### **12 ACRES OF MACHINE TOOLS AT MACHINE TOOL SHOW**

The date for the moving of some \$16,000,000 worth of machine tool exhibits into the Dodge-Chicago Plant for the 1947 Machine Tool Show has been advanced from August 25th to August 4th, the National Machine Tool Builders' Association announced today in Cleveland.

This will provide an extra three weeks for the immense task of moving in, setting up, and placing in full operation the vast number of machine tools and other metalworking equipment which will comprise the world's greatest machine shop in a nine-day working demonstration. The show will be open daily except Sunday, from September 17th to 26th. It will cover more than 500,000 square feet of space, approximately 12 acres, in the Dodge-Chicago Plant in Chicago, the huge industrial facility now occupied by the Tucker Corporation.

The number of exhibitors has grown to more than 275 for this fourth Machine Tool Show to be sponsored by the N. M. T. B. A. The three previous shows, 1927-1929-1935, were held in Cleveland.

In addition to more than 150 association members who will exhibit the latest developments in machine tools, forging

(Please turn to page 248)



A

# Who's Right...

## WHEN EXPERTS' "EYE-GAUGING" DISAGREES?



A to B equals how many turns of the wheel?



What size is this Socket Screw?

B



### Answers:

1. Two turns.
2. No question if it's Size-Marked!

● In everyday shop practice, many problems arise that require "eye-gauging". Identifying the correct size and pitch of an ordinary socket head cap screw is one example. In recent tests, this simple question stumped many good mechanics. On the job, if they guessed, they'd chance errors and delays. Good workmen don't guess—they "mike" or gauge the screw—but that, too, takes time.

Now, the **SIZE-MARK** on the head of every P-K Socket Head Cap Screw ends the need for guessing or gauging. Pick up a P-K Socket Head Cap Screw anywhere . . . no matter where it has strayed from the labeled box . . . you can see its size and pitch at a glance.

The **SIZE-MARK** is welcomed by assembly workers because it saves

time. It helps the tool-crib men speed up sorting of mixed-up, left-over screws. It helps new workers learn screw sizes faster. It's a sales feature, too . . . maintenance men in the field can reassemble faster after servicing.

### Plus GEAR GRIP\*

Gear Grip on Size-Marked Socket Head Cap Screws is another aid to faster work . . . it saves highly-paid fingers from slipping, even when oily. Only P-K offers **SIZE-MARK** and **GEAR GRIP**.

**SAMPLES FREE.** Show advantages of P-K Size-Marked Gear Grip Socket Head Cap Screws in contrast with ordinary Socket Screws. Compare and judge for yourself. Write Parker-Kalon Corp., 200 Varick St., New York 14, New York.



*You know you're right*

**IF IT'S P-K... IT'S SIZE-MARKED**

P-K SOCKET SCREWS ARE  
AVAILABLE FOR PROMPT DELIVERIES.  
SEND FOR STOCK LIST NOW.

\*U. S. Pat. No. 126,409

SOLD ONLY THROUGH ACCREDITED DISTRIBUTORS

**PARKER-KALON** *Cold-forged* **SOCKET SCREWS**

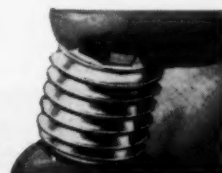
BE SURE TO SEE THE  
PARKER-KALON EXHIBIT  
BOOTH 243A  
NATIONAL  
MACHINE TOOL SHOW  
CHICAGO — SEPT. 17 TO 26

### Another P-K First —

### GROUND THREAD Socket Set Screws

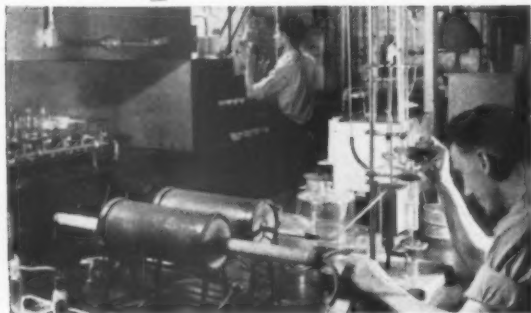
Smooth, mirror-bright, clean finished threads — centerless ground on hardened blanks. Faultless contour and lead, dependable Class 3 Fit. Free from

imperfections common to ordinary cut thread set screws . . . a "shining example" of good workmanship. Get samples now . . . see and feel the difference!





*From selection of Raw Materials  
...to Final Assembly*



**RELIABLE SERVICE, LONG LIFE,  
LOW MAINTENANCE COST ARE BUILT INTO**

## **LUNKENHEIMER VALVES**

Selection of the finest raw materials . . . careful testing of each lot of molten metal before it is drawn from furnace or cupola . . . perfect castings made in modern foundries . . . accurate grinding and finishing by skilled mechanics operating the most advanced modern machinery . . . final assembly and checking to rigid standards . . . these are factors that build *quality* into every Lunkenheim Valve—quality which assures that outstanding performance, longer service life, and minimum upkeep familiar to maintenance men everywhere.

Through more than 85 years of constant research, Lunkenheim has originated one important valve design and improvement after another . . . many significant "firsts" . . . all contributing to even finer Lunkenheim Valves . . . even more service and value for their users.

ESTABLISHED 1862

**THE LUNKENHEIMER CO.**

"QUALITY"

CINCINNATI 14, OHIO, U. S. A.

Fig. 123  
"N-M-D"  
Globe  
(Non-  
Metallic  
Disc)



Fig. 1430  
Iron Body  
Gate



Fig. 2125  
Bronze Gate



### **Call On Your LUNKENHEIMER DISTRIBUTOR!**

You'll find him fully equipped and ready at all times to assist you in solving problems of valve maintenance and operation. The functions he performs are highly important in the Lunkenheim set-up, designed to give you better, more efficient, more reliable valve service. Lunkenheim Distributors are located in principal industrial centers. There's one near you with complete service facilities.

**BRONZE, IRON, STEEL, AND CORROSION RESISTANT ALLOY VALVES—  
AIR DEVICES, LUBRICATORS, AIRCRAFT FITTINGS**

(Continued from page 246)

machines, and other metalworking equipment, including cutting tools of all kinds, measuring instruments, attachments and accessories, and some trade publications serving the metalworking industry.

Many of the machine tools shown at this first show of its kind in 12 years will be entirely new in design. Others will be long-tested machines with new attachments and applications. One exhibitor will have 29 machines, all new in size, capacity, or application. Another will have 28 models and types, some entirely new. The seven machines to be shown by another exhibitor will have a gross weight of 400,000 pounds and a value of \$325,000.

The 2,000 machines on display will show the entire range of the more than 20 different types produced by the machine tool builders of the United States.

1 1 1

### **PACKAGING MACHINERY INSTITUTE TO MEET AT SPRINGFIELD, MASS.**

The Packaging Machinery Manufacturers Institute will hold its 15th annual meeting on October 6 and 7, 1947, at the Hotel Sheraton, Springfield, Mass. The address of the Institute is 342 Madison Avenue, New York, N. Y.

1 1 1

### **START WORK ON ATOMIC LABORATORY—TO BE OPERATED BY GE**

Commencement of construction of the Knolls Atomic Power Laboratory to be built near Schenectady, N.Y. by the Atomic Energy Commission is announced by L. E. Johnston, Area Engineer for the Commission. The laboratory is being erected under the supervision of the General Electric Company, which will operate it for the government when completed. Mr. Johnston said that scientists and engineers will probably begin to occupy the new building by the middle of 1948.

The new atomic laboratory is to be located on part of a 386-acre tract in nearby Niskayuna. On another part of the property the new General Electric Research Laboratory is now rising. The two laboratories, whose work will closely mesh, are to be operated as a unit under the direction of Dr. C. G. Suits, G-E Vice President and director of the Research Laboratory.

A number of scientists for the project have already been recruited, said Dr. Suits, and are at work in the present G-E laboratory buildings. More are being employed as rapidly as qualified men and women can be found. Physicists, metallurgists, chemists and chemical engineers—technical men of all kinds—are needed, he declared.

A number of buildings will form the Knolls Atomic Power Laboratory. In one will be located an experimental pile. Such a pile, it is expected, will form the firebox and boiler of future atomic power plants. Other buildings of the group will be devoted to offices, metallurgy, chemical engineering and chemistry. Another

(Please turn to page 252)

**FEDERAL**

## The hand feels ... the eye knows

Some hands are tough; some are sensitive. The strength of the same hand changes from day to day — even from hour to hour.

Visual gaging takes the human element out of testing and inspection operations. The Dial Indicator magnifies the variation in the workpiece to the point where it cannot be missed. The truth is there — *instantly*. Simultaneously, the amount of the variation is told.

Visual gaging is fast replacing older methods — for infinitely practical reasons. 1) *Precision* — to whatever degree your work requires. 2) *Fewer rejects* — the gaging tells instantly which pieces are correct, over and under size; the over size go back for further grinding. With inspection of selective sampling — right at the machine — variations are spotted, the machine's trend is discovered and corrected before it goes beyond tolerance limits. 3) *Speed* — all these steps mean fewer delays in production; errors caught before they multiply.

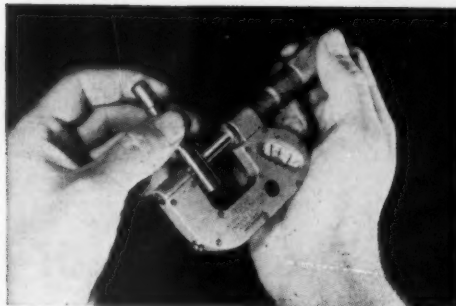
Think of Federal Dial Indicator Gages in terms of *speed* and *money-saving*, as much as in terms of *precision*. For full details on the gages here pictured — and many other types — write us for illustrated Catalog No. 66.

Visit Booth 47 — to see the newest developments in Air, Electronic, Mechanical Gages.

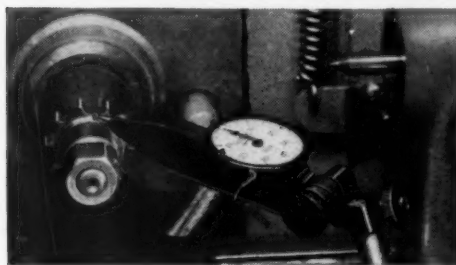


**FEDERAL PRODUCTS CORPORATION**  
1144 EDDY STREET • PROVIDENCE 1, R. I.

• Dimensional Dial Indicators and Indicating Gages — mechanical, electronic, air, multi-dimensional • Automatic Sorting • Dimensional Machine Control • Combinations of these methods.



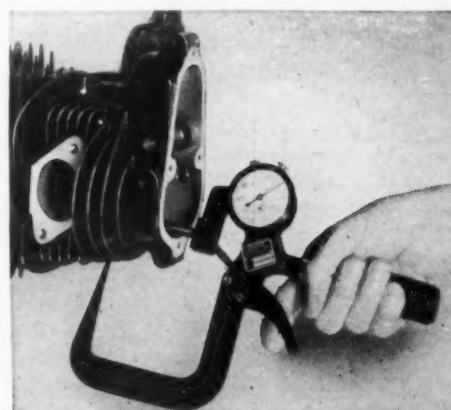
**The Federal Mikemaster**—Model 200 P-1. The Dial Indicator — in a top quality micrometer — shows precise measurements in tenths (.0001"). Instantly adjustable for use as a snap gage on job lots.



**The Federal Testmaster**—the all-purpose test indicator; adaptable to all tool posts, height and surface gages; for a multitude of year-round tests in laboratory, tool room and machine shop.



**Federal Hole Gages**—Series 1201—show the dimensional variation instantly and easily; many sizes and models — for shallow or deep holes, offset or blind holes.



**Federal Caliper Gages**—Series 49—for checking outside dimensions. The arms, made to order in special shapes and lengths, permit checks to be made over and around all types of obstructions.

# TUBES

for **ALL** Power Plant Purposes  
from this **ONE** Dependable Source



B&W is the one place you can get Seamless or Welded steel tubes for any requirement in your power plant. Boiler, condenser, heat-exchanger and other pressure tubes are made by B&W in the widest variety of analyses available from a single source—from low carbons to high alloys, including a full range of stainless steels of the ferritic and austenitic groups; carbon-molybdenum steels, and Croloy grades developed by B&W.

No one could have a stronger incentive than B&W to make pressure tubes of highest quality, safety, uniformity and workability . . . because no other tube manufacturer is an integral part of an organization that also builds boilers and component equipment in which tubes are a major item. B&W pressure tubes therefore bring to your power plant equipment the same service satisfaction that has helped millions of dollars' worth of B&W boilers to earn their 80-year reputation for dependable low-cost steam generation.



TA-1405-G



Other B&amp;W Products

**THE BABCOCK & WILCOX CO.**  
85 LIBERTY STREET • NEW YORK 6, N. Y.

Water-Tube Boilers, for Stationary Power Plants, for Marine Service • Water-Cooled Furnaces • Superheaters • Economizers • Air Heaters • Pulverized-Coal Equipment • Chain-Grate Stokers • Oil, Gas and Multi-fuel Burners • Refractories • Process Equipment.

**BABCOCK  
& WILCOX**  
**SEAMLESS  
& WELDED TUBES**

THE BABCOCK & WILCOX TUBE COMPANY  
GENERAL OFFICES: BEAVER FALLS, PA.  
PLANTS: ALLIANCE, OHIO AND BEAVER FALLS, PA.



● ENGINEERED AND MOLDED AT NO. 1 PLASTICS AVENUE



**PROBLEM—**  
ENGINEER AND MOLD  
HOUSING FOR CUBE  
STEAK MACHINE.  
MUST BE DURABLE,  
ATTRACTIVE, EASY  
TO CLEAN.

## Have you a steak in plastics?

● Here's a case where plastics contribute to good eating—by forming an attractive, resistant, easy-to-clean housing for this new cube steak machine. It was engineered and molded by General Electric for the Cube Steak Machine Company, Inc., of Boston, Massachusetts. The gleaming white plastics surface resists the action of meat juices and cleaning agents—stays lustrous and beautiful despite the wear and tear of everyday use.

Are you taking full advantage of plastics? Whether you make steak machines,

lipsticks, or locomotives, General Electric's *complete* plastics service is equipped to design, engineer, and mold plastics to meet your individual requirements. The world's largest molder of finished plastics products, G. E. works with all types of plastics materials—can recommend without bias the best one for your particular job.

May we send you, free, the full-color booklet, "Problems and Solutions in Plastics"? Just write Plastics Division, Chemical Department, General Electric Co., 1 Plastics Avenue, Pittsfield, Mass.

**GENERAL  ELECTRIC**

CD47-A85

GENERAL ELECTRIC PLASTICS FACTORIES ARE LOCATED IN FORT WAYNE, IND., COSHOCTON, OHIO, MERIDEN, CONN., SCRANTON, PA., TAUNTON AND PITTSFIELD, MASS.

### G-E Complete Service — Everything in Plastics

#### BACKED BY 53 YEARS OF EXPERIENCE.

We've been designing and manufacturing plastics products ever since 1894. G-E research works continually to develop new materials, new processes, new applications.

**NO. 1 PLASTICS AVENUE**—complete plastics service—engineering, design and mold-making. Our own industrial designers and engineers, working together, create plastics parts that are both scientifically sound and good-looking. Our own toolrooms are manned by skilled craftsmen—average precision mold experience, 12 years.

**ALL TYPES OF PLASTICS.** Facilities for compression, injection, transfer and cold molding... for high and low pressure laminating... for fabricating. G-E Quality Control—a byword in industry, means as many as 160 inspections and analyses for a single plastic part.



## H-VW-M SALUTES

## The International Silver Company

1847 ROGERS BROS. COMPLETES  
100 YEARS OF FINE CRAFTSMANSHIP

Five generations of experienced craftsmen have contributed to the beauty, quality and richness of International Silver's 1847 Rogers Bros. Silverplate. The sculpturing, high raised relief, beautifully wrought detail, are all the results of painstaking attention to the smallest details of manufacturing and processing. Yes, from the base metal to the finished piece, The International Silver Company demands—and gets—the best in materials and equipment.



One of three H-VW-M Semi-Automatic Plating Conveyors in 1847 Rogers Bros. plant, Meriden, Conn. This specially built equipment has multiple agitation features which, with scientific control, assure uniform distribution of pure silver. Work is oscillated in three distinct motions—continuous chain travel moves racks of flatware forward, while entire mechanism is given both longitudinal and transverse reciprocating motions.

Hanson-Van Winkle-Munning Company has consistently supplied electroplating equipment and supplies to The International Silver Company, and both names are synonymous with the evolution and growth of the electroplating industry. Since the beginning of commercial electroplating H-VW-M has contributed fundamental developments, originated new processes, equipment and supplies which have helped to bring the plating industry to its present high status.



## HANSON-VAN WINKLE-MUNNING COMPANY

MATAWAN, NEW JERSEY

Manufacturers of a complete line of electroplating and polishing equipment and supplies

PLANTS: MATAWAN, NEW JERSEY • ANDERSON, INDIANA

SALES OFFICES: ANDERSON • CHICAGO • CLEVELAND • DAYTON • DETROIT • GRAND RAPIDS  
MATAWAN • MILWAUKEE • NEW HAVEN • NEW YORK • PHILADELPHIA • PITTSBURGH • ROCHESTER  
SPRINGFIELD (MASS.) • STRATFORD (CONN.) • SYRACUSEPICK THESE  
BLADES

## for LONGER CUTTING LIFE

For most economical production metal-sawing, pick the long-life GRIFFIN SPECIAL ALLOY. Molybdenum high speed steel. Machine and hand frame sizes.

To cut stainless, chrome, nickel and all other tough alloys, pick the GRIFFIN HIGH SPEED STEEL. 18-4-1 tungsten high speed steel. Machine and hand frame sizes.

For any hand-frame use, pick the tough all purpose NEW GRIFFIN. Flexible as a soft-back, durable as an all-hard.

For hand-cutting thinnest sheet, tubing, conduit, etc., pick the GRIFFIN NON-STRIP. Teeth don't snap out.

For precision contour cutting, pick GRIFFIN BANK SAWS. Four types for metal-cutting and wood-cutting.

Write for new 20-page Griffin Price List. Full descriptions, sizes, selection tables, etc.

General Sales Agent

JOHN H. GRAHAM &amp; CO., INC.

Dept. C, 105 Duane St., New York 8, N. Y.

ASK YOUR DISTRIBUTOR FOR

**GRIFFIN**

HACK SAW BLADES AND BAND SAWS

Made by G. W. GRIFFIN CO., Franklin, N. H., Hack and Coping Saw Blade Specialists since 1880

(Continued from page 248)

building will house a 3,500,000-volt electrostatic, or Van de Graff, generator, for atom-smashing studies. J. Gordon Turnbull, Inc., of Cleveland, is the architect for the new laboratory.

An earlier government announcement about the new laboratory said that its purpose would be to conduct research in all phases of atomic power development, and that in addition research on specific problems in connection with the operation of the Hanford Engineer Works in the state of Washington, now operated by General Electric's Chemical Department, would be carried on in the new facility.

1 1 1

BEMIS BAG MAKES CHANGES  
IN EXECUTIVE STAFF

Bemis Bro. Bag Co., St. Louis, Mo. has announced the following personnel changes in its executive staff:

C. W. Loomis, manager of the Memphis plant since 1931, has been transferred to St. Louis where he will assume im-



F. C. Chenault

R. R. Duff

portant administrative duties at the general offices of the company. F. C. Chenault, sales manager at Memphis, succeeds Mr. Loomis as manager of the plant. He has been with the Bemis Co. for over 30 years. R. R. Duff, now in the market research department in St. Louis, succeeds Mr. Chenault as sales manager at Memphis. He has been with the company since 1932, and during the war served in Washington in the War Foods Administration and in other governmental agencies.

1 1 1

STANDARD REGISTER ANNOUNCES  
TERRITORIAL CHANGES

W. D. Caton, Vice President in Charge of Sales, The Standard Register Company, Dayton, Ohio, recently announced the following changes in the company's sales territories and sales management personnel to enable divisional and regional managers to concentrate their work with fewer men, and thus provide better customer contact and relations. Former sales territories have been subdivided along with the creation of two new sales divisions and five new regions.

J. W. Mathews will continue as sales manager of the Western Division; R. M. Henry will operate as the Northeastern Division Sales Manager; W. O. Woolley, former Federal Government Sales Manager, will become Southeastern Division Sales Manager; and J. W. Lawrie, former New York Regional Manager, will head the Central Sales Division.

(Please turn to page 254)

Specify **MO-MAX** *for all*  
HIGH SPEED STEELS  
*of your CUTTING and TURNING TOOLS*



Because only **MO-MAX**

## GIVES YOU ALL THESE ADVANTAGES...

1. MO-MAX has superior cutting qualities.
2. The machinability of MO-MAX is unexcelled.
3. MO-MAX is economical. Its specific gravity is about 8% less than that of 18% tungsten steel.
4. MO-MAX is available in a standardized composition; also in cobalt and high vanadium varieties for special high speed steel requirements.
5. For 14 years MO-MAX has demonstrated its superiority in all types of cutting tools.

**Learn all the facts!** Send for your copy of the MO-MAX Handbook, sixth edition. Get the full story about this remarkable steel, including easy-to-follow instructions on heat treating.

**THE CLEVELAND TWIST DRILL COMPANY**

1256 East 49th Street

Cleveland 14, Ohio

### Buyer's Guide to Brands of **MO-MAX**

"LMW"	Allegheny Ludlum Steel Corporation
"MOHICAN"	Atlas Steels Limited
"BETHLEHEM HM"	Bethlehem Steel Company
"MO-CUT"	Braeburn Alloy Steel Corporation
"STAR MAX"	Carpenter Steel Company
"MOLITE M-1"	Columbia Tool Steel Company
"REX T-MO"	Crucible Steel Company of America
"DI-MOL"	Henry Disston & Sons, Inc.
"HI-MO"	Firth-Sterling Steel Company
"REX T-MO"	Holcomb Steel Company
"MOGUL"	Jessop Steel Company
"TATMO"	Lafayette Electric Steel Company
"MIDMAX"	The Midvale Company
"S. T. M."	Simonds Saw & Steel Company
"MO-TUNG"	Universal-Cyclops Steel Corporation
"B-N-2"	Vanadium-Alloys Steel Company
"VUL-MO"	Volcan Crucible Steel Company



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● Your property can be protected by a Page Chain Link Fence made of the metal best suited to your needs...rust-immune Page Stainless Steel...corrosion-resisting Page Aluminum...Page Copper-Bearing Steel, heavily galvanized...long-lasting Page-Armco Ingot Iron. Our nearby member knows local conditions affecting fence and will confer with you on metals and styles, and submit cost estimates without obligation. His firm is long-experienced and reliable. It will engineer and erect your fence expertly. Write for illustrated information and we will send his name.

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## Get Your Copy of **THIS New BULLETIN**



### On "SAFETY" Marking Tools FOR ALL INDUSTRIAL PURPOSES

You need this *New Bulletin*—if you use or buy marking tools. All types of "Safety" steel stamps and dies are illustrated and described—for every marking purpose. Enables you to choose the *correct* tool for your marking application.



154 E. Carson Street

Pittsburgh 19, Pa.

*Write today—  
we will gladly  
send the number  
of copies you  
desire.*

(Continued from page 252)

In the five newly created regions, R. G. Wells will head the Milwaukee Region; W. S. Caldara will operate in western New York State with headquarters at Buffalo; E. G. Betz heads the St. Louis Region; R. J. Ashman will have charge of the Miami, Florida Region; and T. P. O'Shea will manage the Baltimore Region.

Other changes among regional managers include the transfer of E. R. McKeag from Chicago to the New York City Region, and the appointment of W. L. Reese as Chicago manager. R. A. Scudder goes to Philadelphia; P. D. Eldred to Newark, New Jersey; E. M. MacCoy to Washington, D. C.; W. E. Strobach to Kansas City; and F. A. Newcomb to Greensboro, North Carolina to complete the list of new managerial assignments.

1 1 1

### ALUMINUM COMPANY NAMES NEW VICE PRESIDENTS

Ralph V. Davies, Robert B. McKee, and Donovan Wilmot, assistant general sales managers for Aluminum Co. of America, have been promoted to vice-presidents of the company. Mr. Davies will also become general sales manager for Alcoa, succeeding George J. Stanley, vice-president and general sales manager, who retired on July 1.

All three of Alcoa's new vice-presidents are members of the company's "25-year Club", with over a quarter-century of service apiece. Mr. Stanley, who has served the company for more than 42 years in both sales and engineering capacities will continue as a director.

1 1 1

### AUTOMOTIVE ENGINEERS STUDY DATA ON NEW OILS

Synthetic lubricants were characterized as satisfactory for heavy-duty all-weather service in a report on tests with commercial delivery trucks, tractors, compressor trucks, earth-borers, and winch trucks presented at session of the SAE National Transportation meeting in Chicago.

Asserting that, compared with petroleum oils, synthetic lubricants cover a greater range of temperatures with a single grade and cause reduced carbon formation, Don K. Wilson, of New York Light & Power Corp., Albany, N. Y., told the Society of Automotive Engineers that the synthetics give at least double the oil mileage in all classes of service, and greatly facilitate starting and operating in cold weather.

Mr. Wilson reported that seven compressor trucks have been operating nearly 200,000 miles on the synthetic lubricant with filter cartridges changed every 3,000 miles, oil changed every 6,000 miles. Use of synthetic lubricants for nearly three years in a 1929 track-laying tractor, parked and operated on an ash pile outdoors the year round, was said to have revealed that the engine could be started by hand crank in the coldest winter weather and would operate with satisfactory oil pressure.

(Please turn to page 256)



## "ROUGHING IT" THE EASY WAY

Another problem solved by **BWH!**

Applying a new facing to a big western dam posed a problem for the contractor. The old face had to be "roughed" with compressed air into an irregular pattern to hold the new concrete. That meant finding an air hose that could "take" high pressures, heat and oil from the compressors, shocks from sharp falling rocks and contact with rocky surfaces. To handle this job, BWH recommended tough Bay State Air Drill Hose.

The tube of this rugged hose is made

with the highest-quality, extra-heavy rubber . . . able to withstand the deteriorating action of hot oils. Several plies of strong duck, bonded together with long-life friction, form the carcass. Since the contractor selected 2½" hose, the duck had to be 40% heavier than for smaller sizes.

Tube and carcass were encased in a tough rubber cover . . . the strongest ever devised to resist surface damage. This powerfully built hose performed perfectly . . . helped the contractor

finish the job without costly delays.

Bay State Air Drill Hose is just one of the many quality products manufactured by BWH. Whatever industrial rubber goods you need, look to BWH for dependable ruggedness . . . BWH distributors for dependable service.

### HAVE YOU A JOB WHERE STAMINA COUNTS?

Bring us your toughest problems . . . we're specialists in solving them. Consult your nearest BWH distributor, or write direct.

# BOSTON WOVEN HOSE & RUBBER COMPANY

Distributors in All Principal Cities

WORKS: CAMBRIDGE, MASS., U. S. A. • P. O. BOX 1071, BOSTON 3, MASS.



**PREFERRED  
ON ALL COUNTS...**

### **CESCO'S IMPROVED Acitex APRONS AND SLEEVES...**

● CESCO's famous *Acitex* offers more effective resistance to a greater number of acids, caustics and splashing liquids than other adaptable material.

Research and laboratory testing proved *Acitex*' usefulness for aprons and sleeves. On-the-job tests proved its adaptability, versatility and value.



**ACID RESISTANT**  
*Acitex* resists caustics, splashing liquids and injurious acids—such as nitric, sulphuric, hydrochloric, acetic, hydrofluoric, carbolic.

**COMFORTABLE**  
Light weight, cool and comfortable to wear. Easily adjusted *Acitex* straps for attractive fit on every wearer.



**EXTREMELY TOUGH**  
High abrasion resistance. Electronically welded seams and double-thick *Acitex* grommets. No metal parts.

**ECONOMICAL**  
Moderate cost plus durability for real economy. Important dollar savings in injury prevention.



Get the best by specifying CESCO *Acitex* aprons and sleeves. Call, write or wire...

**CHICAGO EYE SHIELD COMPANY**  
2320 Warren Boulevard  
Chicago 12, Illinois



**CESCO  
FOR SAFETY**

(Continued from page 254)

Mr. Wilson disclosed that earth-borers have been operated for more than 125,000 miles with oil changes every 9,200 miles and without troubles formerly experienced from lubricant stiffness in cold weather. A truck-tractor, operated for 14,000 miles on the synthetic oil, was found upon inspection to have a typically clean engine, free from varnish, stain, corrosion, and evidence of wear. Delivery trucks have been making test operations exceeding 60,000 miles, with oil changes at 12,000 to 18,000 miles.

1 1 1

### **FORM NATIONAL ASSOCIATION OF RELAY MANUFACTURERS**

The recently created National Association of Relay Manufacturers has set as its first goal the establishment of a code of standards by which electrical relays may be tested and rated.

The association was formally organized in Chicago in May, when representatives of leading relay manufacturers from all parts of the country drew up a charter of aims, and elected Ralph T. Brengle, Potter & Brumfield Sales Co., Chicago, as first president.



Ralph T. Brengle, of Potter & Brumfield Sales Co., Chicago

A number of efforts toward standardization of relay ratings have been made in the past by individual companies, but have not been broadly accepted. The resulting confusion has created a situation in which buyers may receive widely differing relays from two manufacturers, even though published specifications are identical. According to Mr. Brengle, standardization will assist both relay buyer and manufacturer.

The association intends to take steps toward the solution of other mutual problems such as material specifications, general characteristics, classifications, government and underwriters' specifications, and more effective metallurgical research for improvement in performance and durability of products.

1 1 1

### **RADIO FREQUENCY HEATING COURSE ANNOUNCED**

A basic sound slide course on Radio Frequency Heating, of special interest to plant engineers, metallurgists, and technicians in heating fields, is now being offered by Westinghouse in a series of eight 2-hour lecture units. Simple

(Please turn to page 258)



## **DARNELL CASTERS & Wheels**

**KEEP**

**TURNING**

**AND**

**EARNING**

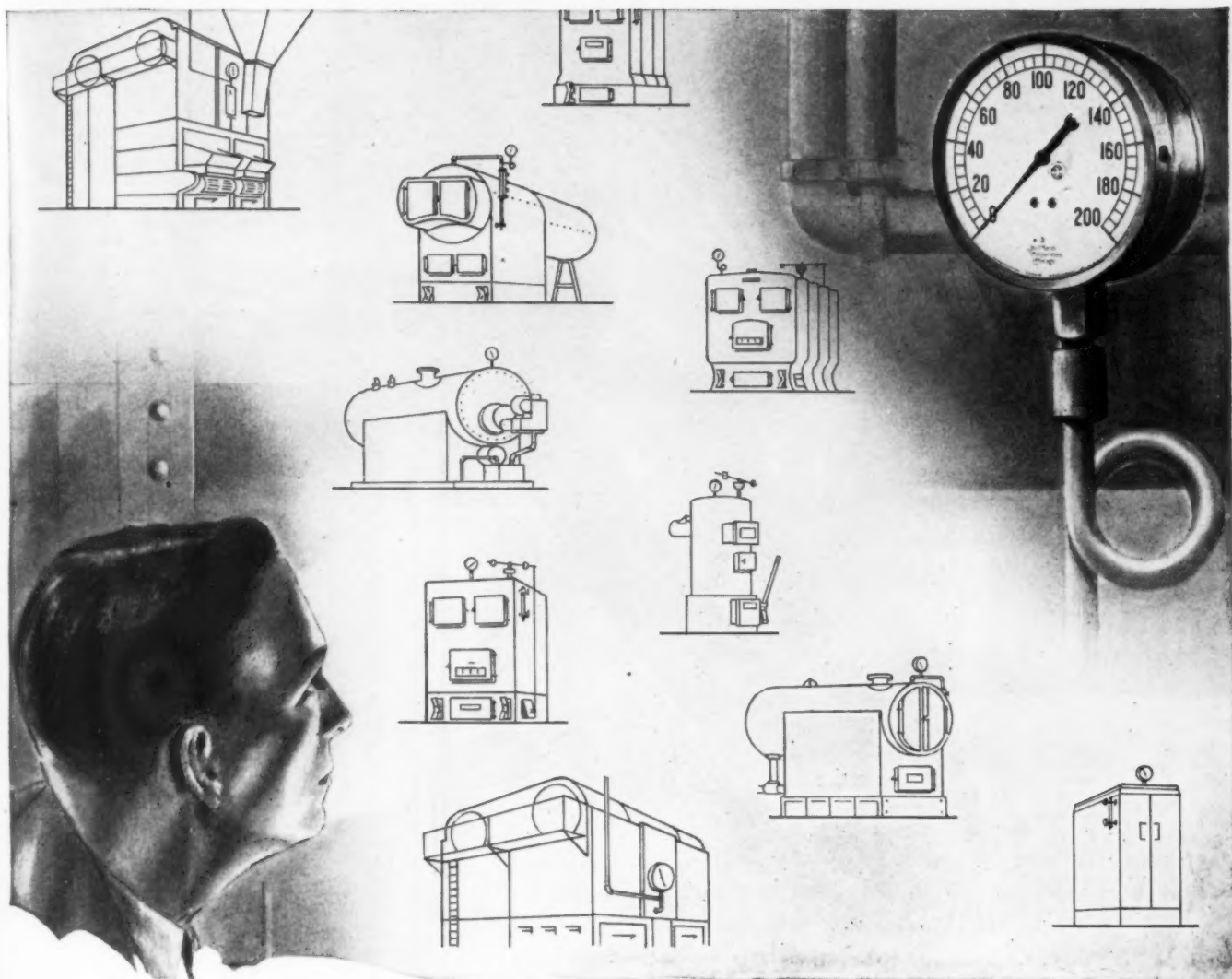
**DARNELL CORP. LTD.**

LONG BEACH 4, CALIFORNIA

60 WALKER ST. NEW YORK 13, N.Y.

36 N. CLINTON, CHICAGO 6, ILL.





## ... Way out in front in the boiler field

● Yes, a large majority of boiler manufacturers use Marsh pressure gauges. Marsh is out in front in every branch of this big industry—low pressure, high pressure, cast iron, fire tube, self-contained, water tube—from the smallest up to the largest.

In current trade directories, more than 65% of the boiler manufacturers listed equip their product with Marsh Gauges; and while actual boiler production figures are not available, this particular 65% of the boiler manufacturers unquestionably do, by the most conserva-

tive estimate, over 80% of the world's boiler business!

Here is a remarkable tribute to the lasting accuracy of Marsh instruments by men who use gauges in large quantities—men who know pressure gauges forward and backward. Yet it is only one example of the preference shown in many fields by manufacturers of products in which accurate pressure indication is vital.\*

Keep this in mind when you buy pressure gauges. Use the instruments that are preferred by the most discriminative users of pressure gauges . . . Marsh.

**Jas. P. Marsh products include:** A full line and range of gauges in pressure, compound, altitude, hydraulic, sprinkler, ammonia, ounce-graduated retard, test, and diaphragm types. Dial thermometers in rigid stem and remote reading types. A broad line of steam and hot water heating specialties. Ask for literature.



**MARSH ALONE HAS THE "RECALIBRATOR"**—quickest and best way to correct a gauge that has been knocked out of adjustment by improper handling.

\* Subsequent advertisements will cite additional examples of this.

**JAS. P. MARSH CORPORATION**  
2035 Southport Avenue, Chicago 14, Illinois

# MARSH GAUGES

"THE STANDARD  
OF ACCURACY"



*For Long, Accurate Cutting...*

SPECIFY  
**MILFORD**  
FLEXIBLE BACK  
METAL-CUTTING  
**BAND SAW**



**T**HESE flexible back, metal-cutting saws have teeth as hard and as tough as a hack saw blade. Made from electric furnace steel, and heat treated by the most experienced producers of metal-cutting band saw blades. Used widely in foundries and metal-working plants for cutting all types of ferrous and non-ferrous metals.

### and MILFORD PROFILE SAW



The narrow band saw for all contour sawing, jig, and band saw machines. Made from the same steel as the famous MILFORD flexible back saws, but designed and heat treated for cutting irregular shapes, either internally or externally, in metal or plastics.

Order from your Mill Supply Distributor. He is always ready to serve your needs for all factory and mill supplies as well as MILFORD hack saw and band saw blades.

**MILFORD**

PROFILE AND  
BAND SAW BLADES  
RESISTOR AND DUPLEX  
HACK SAW BLADES

THE HENRY G. THOMPSON & SON CO.

Saw Specialists Exclusively for Over 65 Years  
NEW HAVEN 5, CONNECTICUT, U. S. A.

(Continued from page 256)

"rule of thumb" methods for determining how and when R. F. Heating can be practically and economically applied in industry are outlined. Lecture units cover metal working applications like soldering, brazing, annealing, and hardening by Induction Heating, as well as bonding of wood preheating of plastics, drying and curing of rubber and textiles, thawing and deinfestation of food products by Dielectric Heating.

Entitled "Radio Frequency Heating--Fundamentals and Applications", the complete course is furnished in a kit containing sufficient material for 20 class members. Included are a set of 15 slide films, a set of records to match, 20 sets of review booklets, and quiz questions. Of added value is an instructor's manual which contains complete lecture outlines, quizzes, suggestions on presentation and over 200 pages of reference material. All quizzes are of the word-selection type requiring a minimum of the class-member's time.

Further information regarding the course may be had from the Westinghouse Electric Corporation, Box 868, Pittsburgh 30, Pa.

1 1 1

### SEE NO IMMEDIATE DECREASE IN STEEL DEMAND

The demand for steel, T. M. Girdler, chairman, and C. M. White, president, Republic Steel Corporation told Republic stockholders in the annual report released recently continues at an abnormally high rate with no evidence of any decrease in the immediate future.

"Every ton of steel which we can produce," the Republic executives said, "is urgently needed by American industry and at the same time we are having increasing inquiries from abroad which cannot be met without domestic hardship. It is safe to say that unless situations arise which cannot now be definitely foreseen Republic's operations for 1947 should be at a maximum rate. Every blast furnace in the corporation is in production."

The report also covered agreement for the purchase of the steel plant at South Chicago which Republic built during the war for the Defense Plant Corporation. Under the terms of the agreement Republic will pay \$35,000,000 of which \$5,000,000 is due with the transfer of title. The balance will be paid in 20 annual payments of \$1,500,000. With the completion of the purchase Republic will own the modern steel plant consisting of an ore dock, a by-product coke plant, a blast furnace four tilting open hearth furnaces, 9 electric furnaces of which 6 are installed, a 44-inch blooming mill, and a 36-32 inch bar mill, together with complete service facilities.

The steel executives pointed out that one of the great problems of 1946 was the task of meeting demands for steel on the part of customers. "We have, however," they said, "held to our rule of supplying the customers on our books in 1939 and 1940 in order to maintain an equitable distribution".



#### UNIFORM WALL THICKNESS

Ladish Seamless Welding Fittings agree with pipe sizes in both inside and outside diameters, thus OD alignment automatically insures ID alignment. This prevents harmful offsets that cause turbulence and pressure loss.



#### SMOOTH INNER SURFACES

Uniformly smooth inner surfaces, free from buckling and irregularities, reduce frictional resistance and minimize pressure drop throughout the entire piping system.



#### FULL EFFECTIVE RADIUS

Being true arcs of circles, Ladish Ells and Return Bends reduce turbulence and pressure loss because changes in flow direction are uniform and gradual at all points around the fitting.



#### TRUE CIRCULARITY

True circularity and full diameter safeguard against pressure loss and undercutting caused by flattened or distorted surfaces.



# For MAXIMUM Flow Efficiency

## INSTALL LADISH SEAMLESS WELDING FITTINGS



Modern piping practice... with its steadily mounting pressures and velocities... demands fittings which have been carefully designed to reduce turbulence, frictional resistance and pressure losses to a minimum.

Ladish Seamless Welding Fittings are designed and produced under the most rigid controls to insure not only the strength and toughness needed to withstand these stresses—but to provide features that maintain smooth, undistorted flow throughout the piping system. The panel at left explains how the uniform walls... smooth inner surfaces... full effective radii... and true circularity of Ladish Fittings promote flow efficiency.

For additional information, and for prompt service in meeting your fittings requirements, contact your nearby Ladish Distributor or District Office.

*Controlled Quality*  
FITTINGS



# LADISH CO.

CUDAHY, WISCONSIN

MILWAUKEE SUBURB

DISTRICT OFFICES:

New York • Buffalo • Pittsburgh • Cleveland • Chicago • St. Louis • Atlanta • Houston • Los Angeles



MARK PROGRESS



## NOW...Available with Side Shields

Just recently introduced but already a favorite with machine, hand tool and laboratory workers because of their lightweight comfort and protection . . . AO F-9200 Series Ful-Vue Goggles now may be had with acetate side shields for added safety from particles striking from the sides. The shields are perforated to provide ventilation and help keep lenses from fogging.

Ful-Vue benefits provide goggles with vision clarity matched only by the naked eye—lenses conform to and cover eye orbit—hinges and temples are out of line of sight. Nose pads evenly distribute goggle weight and the new keyhole bridge is light and face-formed for comfort. AO Ful-Vue Goggles are available with 6-curve Super Armorplate, clear or Calobar Lenses. Five bridge sizes. Your nearest AO Safety Representative can supply you.



American  Optical

COMPANY  
Safety Division

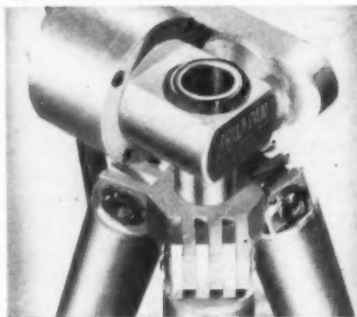
SOUTHBRIDGE, MASS. • BRANCHES IN PRINCIPAL CITIES

## NEW Ful-Vue Acetate Goggles



# Precision fastenings that cut costs— Waldes Truarc Retaining Rings!

## Bowed ring gives resilient tension, ends "shimmy," costly machining!



In the Trupan Tripod manufactured by Accmatool Company of New York, a Truarc Bowed\* ring positions pivot pin. It exerts a downward pressure of 50 lbs., with two-way spring action. End-play from accumulated tolerances is taken up resiliently. Tension remains constant.

## Beveled ring eliminates shims, saves 20 minutes' assembly time!



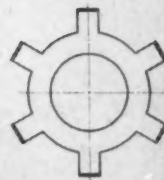
In the Tachometer Generator of Kollsman Instrument Division, Square D Company, Truarc Beveled\* ring absorbs end-play rigidly from accumulated tolerances up to .010. It stays secure against heavy thrust and vibration. Ease of dis-assembly simplifies maintenance and repairs.

There's a Waldes Truarc precision-engineered ring for every fastening need. Truarc rings give a never-failing grip, keep constant circularity, do a better job of holding machine parts together. Yet they are easily removed and replaced in a few seconds. See what can be done for your product: send your drawing to Waldes Truarc Technical Service Engineers.

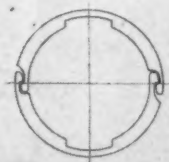
### OTHER TRUARC RINGS GIVE BIG SAVINGS IN PRODUCTION, MATERIALS AND MAINTENANCE



**CRESCENT AND E-RINGS...**  
Snap on radially where axial assembly is impossible. Give firm grip.



**SELF-LOCKING\*...** Economical where thrust is moderate. Shaft requires no machining. Ring holds fast.



**INTERLOCKING...** 2-piece ring for heavy thrusts. Positive lock against high RPMs and vibration.



**INVERTED\*...** Uniform shoulder for abutting curved surfaces, for bearings with large corner radii.

\*available for both internal and external applications



**WALDES  
TRUARC**  
Reg. U. S. Pat. Off.  
**RETAINING RINGS**

WALDES KOHINOOR, INC., LONG ISLAND CITY 1, NEW YORK  
Canadian Distrib.: Controlite Engineering & Sales Ltd., 20 Bloor Street W., Toronto 5

WALDES TRUARC RETAINING RINGS ARE PROTECTED BY U. S. PATS. 2,302,949; 2,026,454; 2,416,852; 2,420,921  
AND OTHER PATS. PEND.

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In Retaining  
Rings

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Please send booklet, "New Development In Retaining  
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Title \_\_\_\_\_

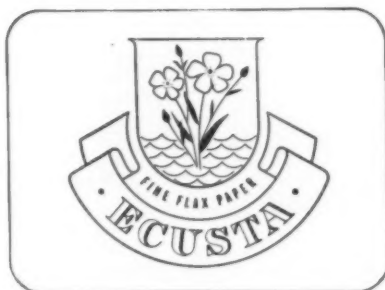
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*Make Your Letterheads*

# IMPORTANT LOOKING



FINE FLAX WRITING

LINEN FLAX WRITING

FINE FLAX AIR MAIL

FLAX-OPAQUE BIBLE AND PRINTING PAPERS

BOXED TYPEWRITER PAPERS

*Ecusta Paper Corporation*

PISGAH FOREST, NORTH CAROLINA



PRODUCTION  
EXECUTIVE

Office

Equipment and Supply

Monthly

## FORMS FORUM

Forms System used by the Purchasing Department of the Edge Moor Iron Works—These include a purchasing order form in three styles, Purchasing Requisition, Receiving Report and Practical Stock and Record Cards

The accompanying forms system has been used for several years by the purchasing department of the Edge Moor Iron Works, Inc., Edge Moor, Delaware, makers of water tube boilers, process equipment and welded steel products, and has functioned quite successfully. It was devised by M. T. Rodney, purchasing agent, who supplied the forms for use in the Forms Forum.

Three styles of the Purchasing Order are printed, namely, Form 941, Form 941A, and Form 941B. The first of these is the regular form, and form 941A is an "Alteration of Order" form, differing from the regular purchasing order only in that the designation "Alteration of Order" is printed in red thereon. Form 941B also is identical with the regular purchasing order form except that price information is obliterated, and the form is used for making extra copies of the purchase order for vendors or others who may have need for them. As many as ten copies can be made in one writing by the use of an electric typewriter.

The purchase order, and also the alteration of order, are printed on letter-size sheets. Seven copies of the purchase order are prepared for the following  
(Please turn to page 264)

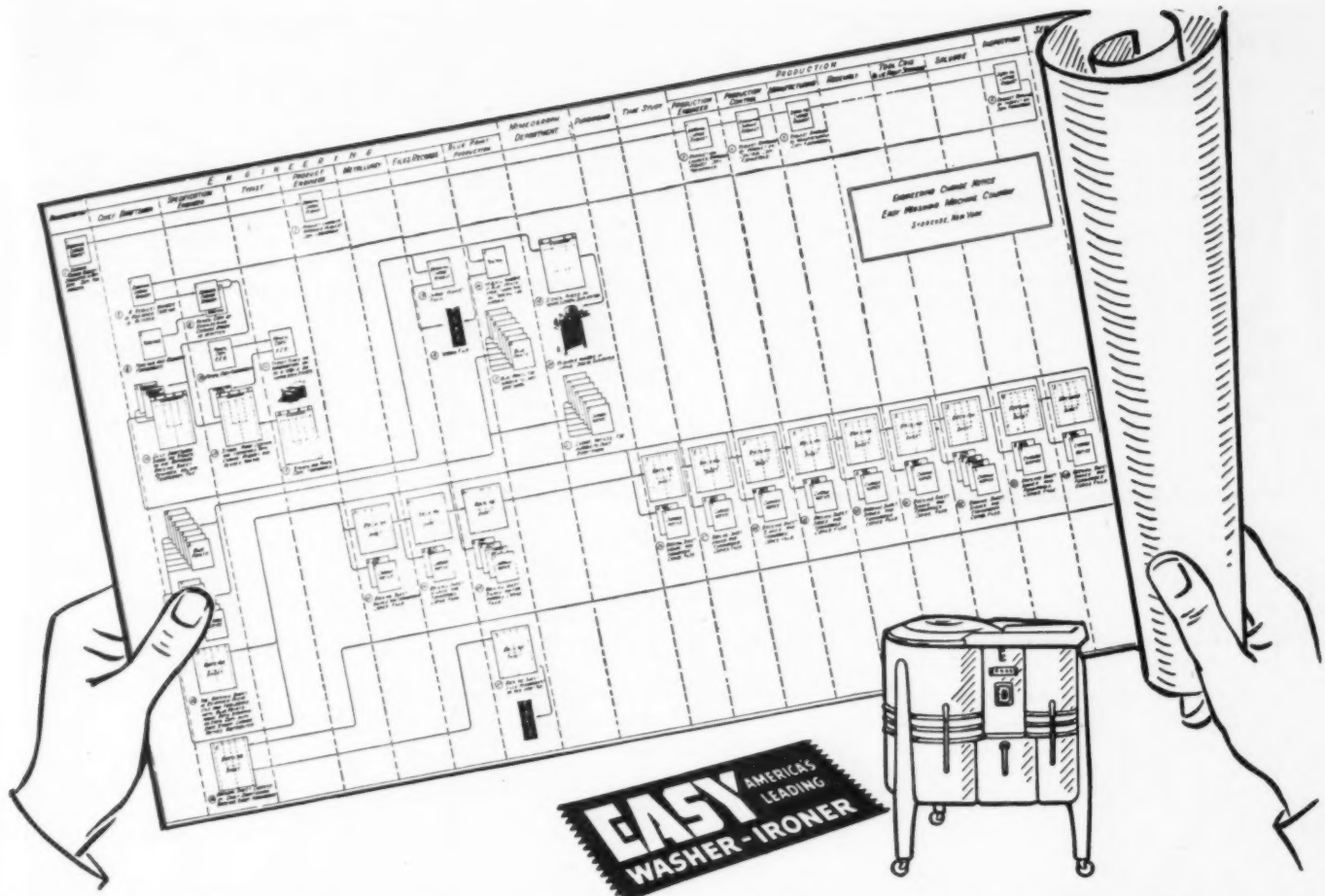
EDGE MOOR IRON WORKS, INC. EDGE MOOR, DELAWARE						
CHARGE ACCOUNT		DATE		PURCHASE ORDER NO.		
Actual size 8 1/2" x 11"						
<b>INSTRUCTIONS</b> Please acknowledge this purchase order by return mail and state date shipment will be made. <b>IMPORTANT NOTES:</b> All pieces, boxes, bags, etc. must be marked or tagged with Edge Moor purchase order number and Edge Moor part number. Three (3) copies of shipping list must be mailed to Edge Moor Iron Works, Inc. same day shipment is made. <b>INVOICE IN DUPLICATE</b> attached to original bill of lading will insure prompt payment.						
PLEASE FURNISH THE ITEMS LISTED BELOW, SUBJECT TO THE TERMS AND CONDITIONS SPECIFIED INCLUDING THE CONDITIONS APPEARING ON THE REVERSE SIDE OF THIS ORDER						
SHIP TO			SHIP VIA			
TERMS			QUOTATION REFERENCE			
F. O. B.			DATE SHIPMENT PROMISED			
Item No.	QUANTITY	ARTICLE AND DESCRIPTION	E. M. PART NO.	UNIT PRICE	AMOUNT	
Form 941 By _____ Purchasing Agent Per _____						

Purchase order provides space for "Quotation Reference." The "Conditions" that appear on reverse of purchase order are published in accompanying text.

Below: Purchasing department record form which appears on back of that department's file copy of purchase order.

F O B		QUANTITY		RECEIVED		Quantity Ordered	MATERIAL AND SPECIFICATION	Total Wt.	Unit Price	Trade Disc.	Cash Disc.	F O B
1												
2												
3												





# Speeds Engineering Change Orders!

**Flow chart tells how Mimeograph brand duplicator and supplies helped speed up Engineering Change Orders for leading washing machine manufacturer.**

New postwar models . . . big consumer demand . . . a 70-year reputation for top-notch engineering to maintain.

No wonder Easy Washing Machine Corp., Syracuse, New York, wanted even greater speed and accuracy in getting out its Engineering Change Orders.

And Easy got what it wanted when executives picked the Mimeograph brand

duplicator and Mimeograph brand die-impressed stencils to help solve this problem. Savings, too, in "real money" amounts.

**Increased accuracy**—all orders are typed directly on a Mimeograph brand stencil, which has been previously die-impressed with standard form. Engineer and chief draftsman sign the stencil as approval. Only one proof-reading required, for all copies are identical.

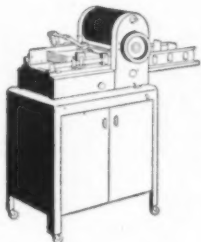
**Increased efficiency**—every department gets its own "original" copy of the Change Order with blueprint of change. Department heads sign the backing of the Mimeograph brand

die-impressed stencil as permanent file record of receipt of change.

**Clear-cut, black-and-white copy**—high readability stands up even under adverse handling in shops.

**Low-cost duplication**—savings in time and labor in preparing Change Orders are more than enough to make the Mimeograph brand duplicator pay for itself in remarkably short order.

This case history is not unusual—it is typical of the way Mimeograph duplication and our trained duplicating experts work with you to save money, speed up paper work. Call the nearest distributor, or write us direct, for help on your specific problems.



**FREE! Complete case study** of the Easy Washing Machine Change Order problem—including the flow chart reproduced above—plus samples of finished order and the Mimeograph brand die-impressed stencil that did the work. It's free! Clip and mail the coupon today.



COPYRIGHT 1947, A. B. DICK COMPANY

A. B. DICK COMPANY, Dept. P-847  
720 West Jackson Boulevard  
Chicago 6, Illinois

Send me a copy of your case study of the Easy Washing Machine Engineering Change Order problem.

NAME \_\_\_\_\_

ADDRESS \_\_\_\_\_

COMPANY \_\_\_\_\_

CITY \_\_\_\_\_ STATE \_\_\_\_\_

## The Mimeograph brand duplicator

is made by

### A. B. Dick Company, Chicago

MIMEOGRAPH is the trade-mark of A. B. Dick Company, Chicago, registered in the U. S. Patent Office.







## MAPPING OUT THE COURSE

The course we take, as producers and suppliers of paper, depends on our customers' requirements. Their present needs and their future wants are the factors which govern our planning.

The result? Guideposts are provided for our widespread organization: for our woodsmen's activities, for developments in our laboratories, for the advance scheduling of paper machines . . . yes, and for smoother handling of transportation and deliveries by our sales people and distributing facilities.

Supplying paper products of the type and

quality needed for today and tomorrow is the course we will continue to follow. International Paper Company, 220 East 42nd Street, New York 17, N. Y.

**INTERNATIONAL  
PAPERS**

*for Printing  
and Converting*






**Old Town**

**RIBBONS  
CARBONS  
Duplicating  
Supplies**

*For those  
who prefer the best*

BROOKLYN 17, N. Y.



**THIS BOOK CAN  
SAVE YOU MONEY!**

This tough, workable thin paper is highly recommended for Air Mail letterheads, office correspondence, advertising folders, booklets, etc. Available in white, six colors, and three finishes. Why not investigate this top quality line of Thin Paper by writing for this book today?

**GIBRALTAR ONION SKIN**

*Is Stocked by Good  
Merchants in Every Paper Center.*

**MILLERS FALLS PAPER CO.**  
MILLERS FALLS, MASS.

### C. E. SHEPPARD COMPANY CELEBRATES 47TH ANNIVERSARY

The C. E. Sheppard Company, loose leaf equipment manufacturers, Long Island City, N. Y., recently celebrated its 47th year of business with a party at the executive offices which was attended by more than 200 officers, employees, representatives and invited guests.



Sales Department Group at CESCO  
Celebration

Service pins, service bonuses and other awards were distributed to members of the "Service Honor Roll" which comprises all employees and officers who have served the company continuously for five years or more—including time in military service.

Holding the record for length of service are C. E. Sheppard, president of the company since its beginning, and Miss Ella Shear, Mr. Sheppard's original secretary. Miss Shear, with two others who have 40 and 41 years of service respectively, received special recognition.

(Please turn to page 270)



Never before such  
**FAST, EASY  
FILING**  
portable file with



*The Oxford*  
**"Pendaflexer"**

This new post-war "Pendaflexer" brings you double filing convenience—a handsome, sturdy steel filing cabinet on wheels, plus hanging Pendaflex\* folders.

Roll the "Pendaflexer" anywhere you need it—that's convenience number one. Then file and find papers instantly in modern hanging Pendaflex\* folders—that's convenience number two!

It's a combination that will break every filing and finding speed record wherever used. Get your "Pendaflexer" now—immediate delivery.

Reg. U.S. PAT. OFF.

**OXFORD FILING SUPPLY COMPANY, INC.**  
328 Morgan Avenue, Brooklyn 6, N. Y.

Send Coupon for Illustrated Price List

Name.....  
Address.....

**QUIK-LABELS  
CODE CARD SYSTEM**

Removable Self-Starters Strip exposes ends of Labels for you to peel!

DON'T PICK. USE SELF-STARTER STRIP TO PEEL LABELS.

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16

DON'T PICK. USE SELF-STARTER STRIP TO PEEL LABELS.

**1 PEEL 2 APPLY 3 IDENTIFY**



LIKEWISE ON FLAT SURFACES

\*Patents Pending

### QUIK-LABELS COST LESS TO BUY-AND-APPLY!

Self-adhesive QUIK-LABEL Wire Markers come in rows on handy cards. QUIK-LABEL'S exclusive Self-Starters Strip automatically exposes ends of labels to grasp instantly. No finger-picking. No ragged edges or tabs to cut fingers and cause slow-downs. More than 500 NEMA markings and colors in stock.

Our central location means faster delivery on these faster wire markers. Your Buy-and-Apply costs for maintenance and production are lower than for any other marker. Attach this ad to your letterhead for FREE sample cards, Price and Stock list.

### W. H. BRADY COMPANY

Est. 1914

Identification Specialists

250 W. Wells St., Milwaukee 3, Wis.



**THIN PAPERS**

*Reduce*

TYPING, MAILING  
and FILING COSTS

*Use*

**ESLEECK**

THIN PAPERS

Fidelity Onion Skin  
Clearcopy Onion Skin  
Superior Manifold

**Esleeck Manufacturing Co.**  
Turners Falls, Mass.





## **AN AMAZING NEW PRODUCTION CONTROL METHOD ... AND HOW IT HELPS PURCHASING**

*It's just a small strip of paper but it does a big job—not only for the Production Planning Department but for Purchasing, which benefits in this way:*

Last-minute rush requests for materials are cut way down. Requisitions are received by the Purchasing Department in proper time, for proper quantities, with vendors' lead time, shop flow time and allowance for scrap all taken into consideration. Moreover, it's possible to reduce the number of purchase orders to be written, because like items are accumulated for monthly periods.

*This device (called a lead-time insert) is part of a synchronized production control system employing Kardex Visible Records and Graph-A-Matic sig-*

*nals. Applied to your company's requirements, such a system prevents costly oversights in day-to-day routine work... permits close inventory control particularly of high dollar value items, enables you to chart your course months in advance, to meet your delivery promises and make best use of material and machine capacity.*

*All your departments will be interested in getting the facts on these improvements in materials and production control, described in complete detail and fully illustrated in our new book entitled "Production Control Systems" (MC 718). Distributed on ten-day loan service only, due to limited quantity. Just telephone our nearest office or write today.*

SYSTEMS DIVISION

# **Remington Rand**

315 FOURTH AVE  
NEW YORK 10, N Y

## ...What part of you goes into every envelope?

An indelible impression of the character of your organization accompanies every letter that leaves your desk. See that it is the *right* one. Ask your printer about your letterhead. Paper is his business. We are sure he will call your attention to Rising Parchment.



### Rising Parchment

- ✓100% rag
- ✓super opaque
- ✓6 standard sizes of envelopes
- ✓distinctive unglazed parchment finish
- ✓four weights

When you want to KNOW... go to an expert!



## Rising Papers

Ask your printer... he KNOWS paper!

Rising Paper Company, Housatonic, Mass.

## There's no numbering problem

### that can't be solved

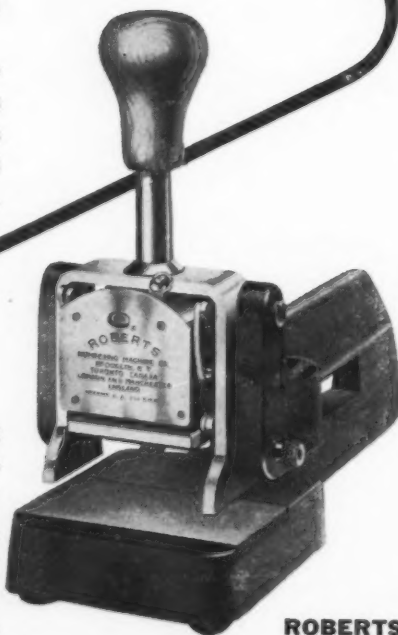
The Roberts line of numbering machines is the largest made, because as new numbering problems have cropped up, we've designed new machines to meet them. Send your problems to us. We'll tell you how to solve them to the best advantage.

#### WRITE FOR CATALOG



#### Just One Of The Big Family Of Roberts Numbering Machines

Automatic numbering and dating machine with die, mounted on platform. Speeds work where volume is large; operator does not have to lift machine. 3 movements, dial set. Unconditionally guaranteed.



**ROBERTS**  
#75P

## ROBERTS NUMBERING MACHINE CO.

703 JAMAICA AVENUE

BROOKLYN 8, NEW YORK

### HEADS OFFICE FURNITURE INSTITUTE TRADE RELATIONS DIVISION

E. Howard Gatewood has been named to head the Wood Office Furniture Institute's newly created Trade Relations Division, with headquarters in Washington, D. C. He comes to the Institute



E. Howard Gatewood

with a considerable background of experience in office equipment sales. Until recently he was with the International Business Machines Corporation in various capacities, his most recent position being that of branch manager of the company's Baltimore Electromatic division.

1 1 1

### GORENFLO NAMED EDIPHONE BOSTON BRANCH MANAGER

Walter C. Gorenflo has been appointed manager of the Boston Branch of the Ediphone Division, Thomas A. Edison, Inc., with headquarters in the United Shoe Machinery Building, Boston. For



Walter C. Gorenflo

the past five years Mr. Gorenflo was Boston branch manager of the Tabulating Machines Division of Remington Rand. He is a member of the Executive Committee of the Sales Managers' Club, the National Office Managers' Association, and the National Association of Cost Accountants.

1 1 1

### PAPER CONVERTERS MEET IN WORCESTER

Miss N. Myra Glazier, president of the Sheppard Envelope Co., Worcester, Mass. was chairman of recent meeting of the New York and Eastern Envelope Manufacturers Association at the Hotel Sheraton, Worcester, Mass. More than 35 of the largest envelope manufacturers on the Atlantic Seaboard were represented. W. H. Woolner, president of the Boston Envelope Company, and

(Please turn to page 272)

# The Mark of Crane - your guide to quality

The riflesmith of the flint-lock period struck his name or initials deep into the barrel with a steel die. It was his mark of pride; of his craftsmanship that was father to the marksmanship of the Colonial rifleman.

The custom of marking the product with the name of the maker is still an honored practice at the Crane mills where for 146 years we have been making paper from cotton and linen fibres only. By a process known as watermarking, the name of Crane becomes an integral part of the paper. It is our mark of pride; your mark of assurance in the purchase of paper for personal, social, and business uses. The next time you buy paper, look for the mark of Crane. You will discover it by holding the sheet of paper against the light.



**CRANE'S**  
FINE PAPERS

MADE IN DALTON, MASSACHUSETTS  
SINCE 1801





(Continued from page 270)

Walter J. Berkowitz, vice-president of the Tension Envelope Company, Kansas City, spoke on recent development in the industry.

After the luncheon and business meeting the delegates toured the plant of the Sheppard Envelope Company.



The accompanying illustration shows Miss Glazier introducing the mayor of Worcester, Charles F. Sullivan, to C. Norman Shaffer, secretary and treasurer of the General Paper Goods Manufacturing Co. of Brooklyn (left) and George W. Jones, president of Berlin Jones Co., Inc., New York City. Mr. Shaffer is vice-president of the association and Mr. Jones is president of both the New York and Eastern Envelope Manufacturers Association and the National Envelope Manufacturers Association.

1 1 1

#### NAMED SALES MANAGER OF DIAGRAPH-BRADLEY

O. K. Patterson has been named sales manager of the Shipping Room Supply Division of the Diagraph-Bradley In-



O. K. Patterson

dustries, Inc., with headquarters in St. Louis. He formerly was in charge of the Eastern Division for Diagraph-Bradley, working out of New York City.

1 1 1

#### FREE FOLDER ON LETTERHEAD DESIGN

A good approach to modern letterhead design is covered in an illustrated folder, "The Proper Use of Illustrative Treatment in Letterhead Design", which is available on request from the Lithographers National Association, 420 Lexington Avenue, New York 17, N. Y. This educational folder makes the point that simplicity alone is not the objective, or is individuality, but that a good letterhead reflects the product or service of the company whose message it carries.

(Please turn to page 274)

# Levelcoat\* PRINTING PAPERS



## Distributed by

<b>ALABAMA</b>	
Birmingham.....	Sloan Paper Company
<b>ARIZONA</b>	
Phoenix.....	Zellerbach Paper Company
<b>ARKANSAS</b>	
Little Rock.....	Arkansas Paper Company
<b>CALIFORNIA</b>	
Eureka.....	Zellerbach Paper Company
Fresno.....	Zellerbach Paper Company
Los Angeles.....	Zellerbach Paper Company
Oakland.....	Zellerbach Paper Company
Redding.....	Zellerbach Paper Company
Sacramento.....	Zellerbach Paper Company
San Diego.....	Zellerbach Paper Company
San Francisco.....	Zellerbach Paper Company
San Jose.....	Zellerbach Paper Company
Stockton.....	Zellerbach Paper Company
<b>COLORADO</b>	
Denver.....	Carpenter Paper Company
Pueblo.....	Carpenter Paper Company
<b>CONNECTICUT</b>	
Hartford.....	The Rourke-Eno Paper Co., Inc.
West Haven.....	Bulkley, Duntun & Co., Inc.
<b>DISTRICT OF COLUMBIA</b>	
Washington.....	The Barton, Duer & Koch Paper Co.
<b>FLORIDA</b>	
Jacksonville.....	Knight Brothers Paper Company
Miami.....	Knight Brothers Paper Company
Orlando.....	Knight Brothers Paper Company
Tallahassee.....	Knight Brothers Paper Company
Tampa.....	Knight Brothers Paper Company
<b>GEORGIA</b>	
Atlanta.....	Sloan Paper Company
<b>IDAHO</b>	
Boise.....	Zellerbach Paper Company
<b>ILLINOIS</b>	
Chicago.....	Berkshire Papers, Inc.
Chicago.....	Chicago Paper Company
Chicago.....	Midland Paper Company
Springfield.....	Capital City Paper Company
<b>INDIANA</b>	
Indianapolis.....	Crescent Paper Company
<b>IOWA</b>	
Des Moines.....	Carpenter Paper Company
Sioux City.....	Carpenter Paper Company
<b>KANSAS</b>	
Topeka.....	Carpenter Paper Company
Wichita.....	Western Newspaper Union
<b>KENTUCKY</b>	
Louisville.....	The Chatfield Paper Corp.
<b>LOUISIANA</b>	
Baton Rouge.....	Louisiana Paper Co., Ltd.
New Orleans.....	The D and W Paper Co.
Shreveport.....	Louisiana Paper Co., Ltd.
<b>MARYLAND</b>	
Baltimore.....	Baltimore Paper Company, Inc.
<b>MASSACHUSETTS</b>	
Boston.....	Carter, Rice & Company Corp.
Springfield.....	Bulkley, Duntun & Co.
Worcester.....	Charles A. Esty Paper Company
<b>MICHIGAN</b>	
Detroit.....	Seaman-Patrick Paper Co.
Grand Rapids.....	Carpenter Paper Company
<b>MINNESOTA</b>	
Duluth.....	John Boshart Paper Company
Minneapolis.....	Carpenter Paper Company
St. Paul.....	Carpenter Paper Company
<b>MISSOURI</b>	
Kansas City.....	Carpenter Paper Company
St. Louis.....	Beacon Paper Company
St. Louis.....	Shaughnessy-Kniep-Hawe Paper Co.
St. Louis.....	Tobey Fine Papers, Inc.
<b>MONTANA</b>	
Billings.....	Carpenter Paper Company
Butte.....	Carpenter Paper Company
Great Falls.....	Carpenter Paper Company
Missoula.....	Carpenter Paper Company

<b>NEBRASKA</b>	
Lincoln.....	Carpenter Paper Company
Omaha.....	Carpenter Paper Company
<b>NEVADA</b>	
Reno.....	Zellerbach Paper Company
<b>NEW JERSEY</b>	
Newark.....	J. E. Linde Paper Company
<b>NEW MEXICO</b>	
Albuquerque.....	Carpenter Paper Company
<b>NEW YORK</b>	
Albany.....	Hudson Valley Paper Company
Brooklyn.....	A. Price & Son, Inc.
Buffalo.....	Hubbs & Howe Company
New York.....	Baldwin Paper Company, Inc.
New York.....	Bulkley, Duntun & Co., Inc.
New York.....	The Canfield Paper Co.
New York.....	Forest Paper Company, Inc.
New York.....	J. E. Linde Paper Company
New York.....	A. Price & Son, Inc.
New York.....	Royal Paper Corporation
Rochester.....	Paper Service, Inc.
Syracuse.....	Paper Service, Inc.
Troy.....	Troy Paper Corporation
<b>NORTH CAROLINA</b>	
Charlotte.....	Dillard Paper Company, Inc.
Greensboro.....	Dillard Paper Company, Inc.
<b>NORTH DAKOTA</b>	
Fargo.....	Western Newspaper Union
<b>OHIO</b>	
Cincinnati.....	The Chatfield Paper Corporation
Cleveland.....	The Pattequin Paper Company
Columbus.....	The Scioto Paper Company
Toledo.....	The Ohio & Michigan Paper Co.
<b>OKLAHOMA</b>	
Oklahoma City.....	Carpenter Paper Company
Tulsa.....	Taylor Paper Company of Oklahoma
<b>OREGON</b>	
Eugene.....	Zellerbach Paper Company
Portland.....	Zellerbach Paper Company
<b>PENNSYLVANIA</b>	
Philadelphia.....	Paper Merchants, Inc.
Philadelphia.....	D. L. Ward Company
Pittsburgh.....	The Chatfield & Woods Co. of Pa.
<b>RHODE ISLAND</b>	
Providence.....	Carter, Rice & Company Corp.
<b>SOUTH CAROLINA</b>	
Greenville.....	Dillard Paper Company, Inc.
<b>TENNESSEE</b>	
Chattanooga.....	Bond-Saunders Paper Co.
Knoxville.....	Southern Paper Company, Inc.
Memphis.....	Taylor Paper Company
Nashville.....	Bond-Saunders Paper Co.
<b>TEXAS</b>	
Austin.....	Carpenter Paper Company
Dallas.....	Carpenter Paper Company
Fort Worth.....	Carpenter Paper Company
Harlingen.....	Carpenter Paper Company
Houston.....	Carpenter Paper Company
Lubbock.....	Carpenter Paper Company
San Antonio.....	Carpenter Paper Company
<b>UTAH</b>	
Salt Lake City.....	Zellerbach Paper Company
<b>VIRGINIA</b>	
Richmond.....	Cauthorne Paper Company
<b>WASHINGTON</b>	
Seattle.....	Zellerbach Paper Company
Spokane.....	Zellerbach Paper Company
Walla Walla.....	Zellerbach Paper Company
Yakima.....	Zellerbach Paper Company
<b>WISCONSIN</b>	
Milwaukee.....	The Bauer Paper Company

#### EXPORT AGENTS

American Paper Exports, Inc., New York, U. S. A.  
Cable Address: APEXINC—New York

If our distributors cannot supply your immediate needs, we solicit your patience. There will be ample Levelcoat Printing Papers for your requirements when our plans for increased production can be realized.

## KIMBERLY-CLARK CORPORATION • NEENAH, WISCONSIN

122 East 42nd Street, NEW YORK 17  
155 Sansome Street, SAN FRANCISCO 4

8 South Michigan Avenue, CHICAGO 3  
22 Marietta Street, N. W., ATLANTA 3

\*TRADE MARK



This advertisement is one of a series appearing in four colors in *Fortune*, *Nation's Business*, *United States News*, *Newsweek* and *Business Week*.

## Test your word knowledge of Paper and Printing



### 1. Mill Brand

- ☐ Paper brand name controlled by manufacturer
- ☐ Nameless paper
- ☐ Brand name controlled by a paper merchant



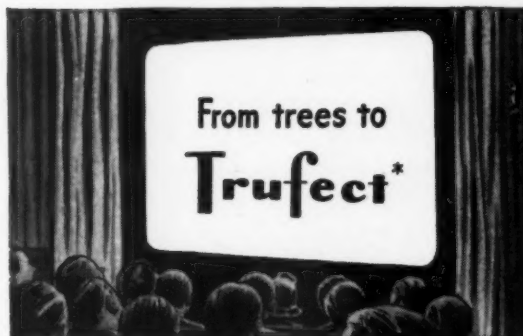
### 2. Dealer Helps

- ☐ Feeder aids for a sheet-fed press
- ☐ Advertising material furnished to dealers
- ☐ Trade paper advertising



### 3. Master Printer

- ☐ Printer with 25 years' service
- ☐ Any graduated apprentice printer
- ☐ One who owns or controls a print shop



### 4. Trufect\*

- ☐ Justifying process in typesetting
- ☐ New type of color film
- ☐ A top quality grade of printing paper

### ANSWERS

**1 Mill Brand** is a paper brand name which is controlled by the manufacturer. Such a brand name is Levelcoat\*—a name backed by 75 years of fine papermaking, and distinguishing Kimberly-Clark's outstanding family of fine printing papers.

**2 Dealer Helps** is the term for advertising material furnished to dealers. For envelope inclosures and other dealer aids, new 1947 Kimfect\* provides a coated paper with the look and feel of quality. Plus economy for volume printing.

**3 A Master Printer** is one who owns or controls a print shop. Time after time, master printers who prize excellence say they like to print with Levelcoat. For Levelcoat reproduces their finest presswork with fidelity and force.

**4 Trufect** is a fine quality grade of Levelcoat printing paper. It has long been preferred for its whiter, brighter surface, ink affinity, and uniformly fine printability—qualities brought now to even greater perfection in new 1947 Trufect.

# Levelcoat\*

## PRINTING PAPERS

Levelcoat\* printing papers are made in the following grades: Trufect\*, Kimfect\*, Multifect\* and Rotofect\*.

\*TRADEMARK

**KIMBERLY-CLARK CORPORATION**

NEENAH, WISCONSIN

1872—SEVENTY-FIVE YEARS OF FINE PAPER MAKING—1947





*Your good will  
ambassador*

It's easy to make the mailman your good will ambassador. Just let us Unistyle with one basic and effective design, all your stationery, business forms and checks. Then they will carry an appropriate and continuing impression of your firm wherever the mailman goes.

Unistyled business forms and stationery become efficient and well dressed printed representatives of your firm. Unistyled checks provide **both** protection and continuous publicity!

The repetition of a basic, eye-appealing Unistyle design on all your business forms, stationery and checks will give them much greater impact and identity value.

Why not write today, for samples and complete details about the Unistyle method of converting your printed messengers into good will ambassadors?

UNISTYLE STATIONERY BY

*The*  
**REYNOLDS**  
*&*  
**REYNOLDS**  
**COMPANY • DAYTON 7, OHIO**

*Established 1866*

SALES OFFICES IN MANY PRINCIPAL CITIES

(Continued from page 272)

Illustrative treatment is used to achieve this objective. A letterhead with its own individuality is a by-product of this approach to letterhead design. The folder also points to the fact that with the choice of printing processes, there are now no restrictions on the various art techniques which can be reproduced on bond letterhead paper.

1 1 1

#### OFFICE POSTAL SCALE



Illustration shows small office postal scale, Model 101A, recently announced by Accurate Parts Manufacturing Co., 12435 Euclid Avenue, Cleveland, Ohio. The scale is all metal, and has cantilever spring for accuracy. Domestic rate tables are shown in panel on front of the scale. The scale is available in office green, red and ivory.

1 1 1

#### INSTANT PAPER AND CARD COUNTING



Sheets and cards may be counted at rates of 1000 per second by means of a new pickup used with a Potter electronic counter, according to the Potter Instrument Co., 136-56 Roosevelt Avenue, Flushing, N. Y.

The sheets or cards are "riffled" by hand, using the technique known to all printers which insures a perfect riffle. The pickup, resembling a phonograph pickup, is moved down the edge of the cards and the count read directly on the electric counter.

Paper as thin as onion skin and as thick as cardboard can be counted with the device. The counter is recommended for determining the quantities in printing operations, inventory work, counting greeting cards, stationery, etc.

(Please turn to page 276)



...IT STAPLES!

FOR PERMANENT FASTENING

...IT PINS!

FOR TEMPORARY FASTENING

...IT TACKS!

ON BULLETIN BOARDS, SHELVES, ETC.

...and it loads quicker, works slicker... because of its Open Channel!

Chromium body protects the channel against grit and dust to insure clog-free performance. Super-hardened steel, precision engineered to last a lifetime!

Load a Swingline stapler with 100% round wire Swingline staples, and you have the speediest, most efficient stapling

team for office, factory, school or home.

**SWINGLINE STAPLES** are 100% round wire, pre-tested to insure rapid-fire penetration and clog-free action in any standard stapler. Look for the red, white and blue box at your stationer's.



**Swingline**  
STAPLES STAPLERS



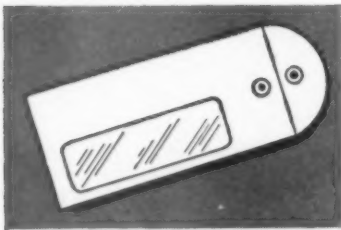
PEED PRODUCTS COMPANY, INC., LONG ISLAND CITY 1, N. Y.

refreshing as an ocean breeze\*



\*The headline above came on an order for Sheppard envelopes — "and be sure", the customer wrote, "they have the Flavor-Seal flaps that are as refreshing as an ocean breeze".

Standard on all Sheppard envelopes is the tangy mint Flavor-Seal flap. It's your assurance of quality — a quality that shows in better manufacture, prompter delivery and better style.



Take for example, the host of small coin-type envelopes such as Florist Card Deliveries with punched ribbon hole, the Invoice Package Envelopes with metal eyelet and Cellophane windows (sketched at left), and the Customer Receipt Envelopes (jewelry, photography, etc.) — they're part of the array that's promoting better taste in business through the use of Sheppard Flavor-Seal flaps. Write today on company letterhead for Sheppard booklet #5.

**Sheppard**  
**ENVELOPE CO.**

One Envelope Terrace • Phone 2-4674

**WORCESTER • MASSACHUSETTS**

Copyright by the Sheppard Envelope Co.

## GLYCERINE BASIS OF BALL PEN INK

Those who have been wondering about the composition of the inks used in those new ball pens will find the answer, for certain pens at least, in U. S. Patent 2,416,145, granted to L. J. Biro. The ink, or more properly the writing paste, is described as a mixture of approximately equal parts of aniline dye and glycerine, and from 35 to 40 per cent of tacky dextrine obtained by mixing powdered dextrine with water and heating the mixture. The glycerine, according to the patent, acts as a lubricant for the ball and maintains the writing paste moist at the surface of the ball to effect good writing, and enables the use of the fountain pen for long periods of time from a single filling.

1 1 1

## VALVE CONTROLLED FOUNTAINBRUSH



Illustration shows the "Cado" Flo-Master fountain brush for writing, marking, and drawing on paper, glass, wood, metal, cloth, leather and cellophane, wet or dry, hot or cold surfaces. This pocket-size unit, finished in satin aluminum, is featured by valve control. It comes with three styles of felt nib points with "instant-dri ink."

1 1 1

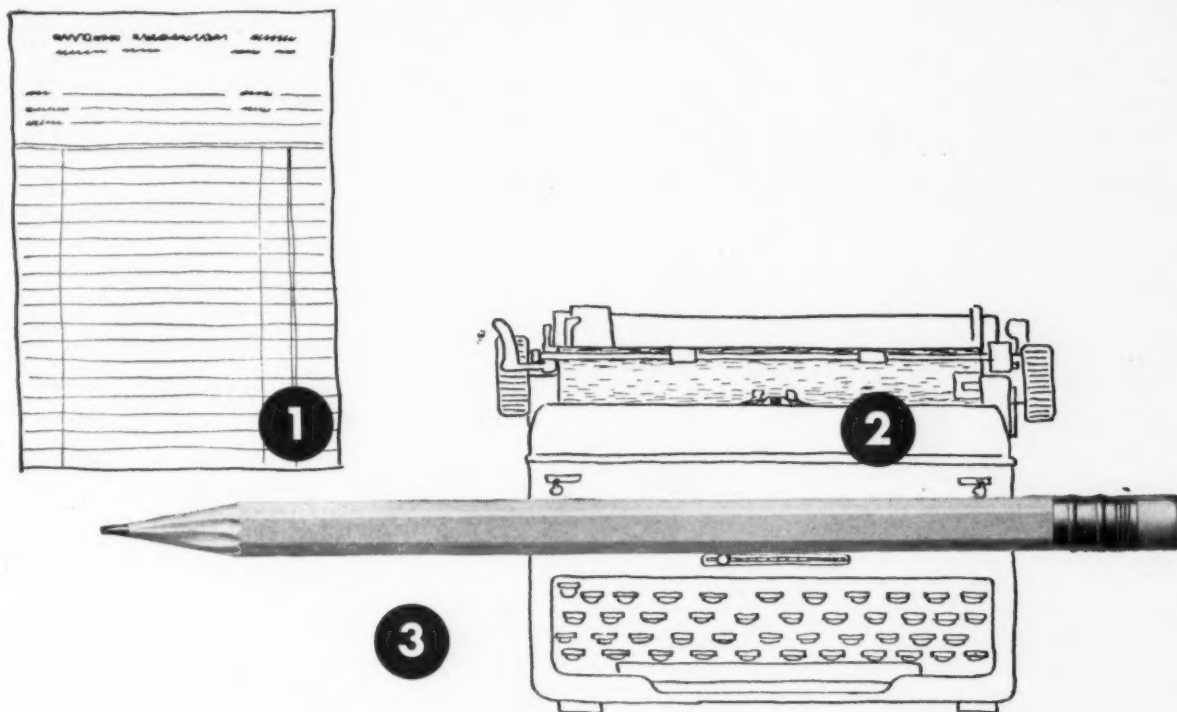
## CHANGES ANNOUNCED IN ENDORSOGRAPH

Mechanical changes which are said to have materially improved the Endorso-graph check endorsing machine, are announced by the Commercial Controls Corporation, Rochester, N. Y. The new



machine has a mechanical trip which is very sensitive, yet maintains its adjustment indefinitely. The improvements are said to make for better, quieter and trouble-free operation. The new machine can be used on any 110 v current, (25, 50, 60 cycle) and d-c with no alterations.

(Please turn to page 280)

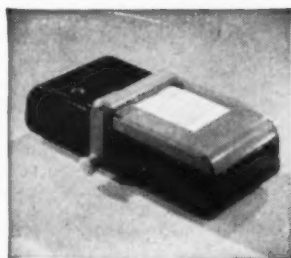


## Why let these three take three-quarters of your payroll?

Look around you at the people in your office. Right now, aren't perhaps 75% of them using a pencil or a typewriter? Or checking . . . filing . . . reading . . . handling . . . *a piece of paper*? Ten to one, it's a business form.

Is 75% of your payroll worth some thought? Then consider these three ways that Uarco Business Forms can reduce your paper work:

1. *Less handling* . . . forms are combined so that one form serves many departments . . . pre-assembling saves time and bother.
2. *Less writing* . . . all necessary copies, 20 or more, come from a single writing.
3. *Less looking* . . . facts are always easy to read, easy to reach.

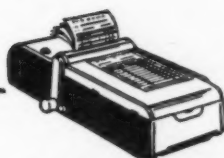


Don't go on paying for unnecessary work! Call your Uarco Representative for a complete survey . . . that's far easier than taking the time for it yourself. No obligation whatever. UARCO INCORPORATED, Chicago, Ill.; Cleveland, Ohio; Oakland, Cal.; Deep River, Conn. *Offices in All Principal Cities.*

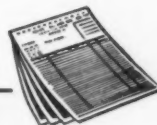
*For Instance* . . . you'll find this Uarco Accu-rite Register a handy cost-saver for hand-written records, material and work orders, etc. Consecutive numbering of forms provides complete, accurate control. One copy is automatically filed, safe from tampering or alteration.



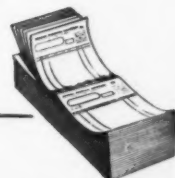
### BUSINESS FORMS



AUTOGRAPHIC REGISTERS  
AND REGISTER FORMS



SINGLE SET  
FORMS



CONTINUOUS-STRIP FORMS  
FOR TYPEWRITTEN AND BUSINESS MACHINE RECORDS



# We're Proud as Punch of Our New Office-home!



**Jean:** Our new desks and chairs are modern, mellow-looking wood. S-m-o-o-t-h!

**Jane:** It's about time! My old desk and chair must have been bought when J.B.'s grandfather founded the company.

**Jean:** Don't be a sourpuss. Aren't you pepped up over the way the office looks now?

**Jane:** Naturally. And it's comfortable. I'm proud to welcome visitors *now*.

**Jean:** I go for the feel of that rich wood grain. Makes the office seem homey in a business-like way.

**Marge:** Credit for *that* goes to Mr. Riggs, of "Purchasing." He told J.B. "nix on dual standards"—with one kind of furniture for *us* and another for the *execs*.

**Jane:** Isn't wood more expensive though?



**Jean:** Not a bit, Janey. Riggs said "wood costs no more." And we get good use out of the furniture long after the company's written it off the books.

**Marge:** Modernization sure does things for a gal's morale.

**Jean:** You can say that again, Marge!

*We'll say it again: for beauty . . . for warmth . . . for economy . . . for better employee and customer relations, furnish your office with wood desks and chairs for everybody!*

*See your office equipment dealer!*



## Wood OFFICE FURNITURE Institute

*America's progressive manufacturers of commercial desks and chairs . . . cooperating in product research and product improvement . . . in the interest of greater office comfort, beauty and morale.*





Fine paper  
says "Hello"—in  
the finest way



FOX RIVER  
Fine Paper

Like the friendly smile,  
the firm handshake, the tipped  
hat . . . fine business stationery  
greets your correspondent the  
*right* way — immeasurably en-  
hancing what you say. Make  
certain with your printer that  
the finest paper represents you.  
FOX RIVER PAPER CORPORA-  
TION, Appleton, Wisconsin.

Cotton Fibre Bond, Ledger, Onion Skin  
"The more Cotton Fibre the finer the Paper"

OUR WATERMARK  
is your quality guarantee

Look through—  
the paper...  
see all three!



1 COTTON FIBRE

2 100 - 75 - 50 or 25%  
COTTON FIBRE CONTENT

3 MADE "by FOX RIVER"

## VISUAL CONTROL BOARD



Trendicator is the name of new type of visual control board made by L. M. Osborne Co., 45 2nd Street, San Francisco, Calif. It is a mechanical control of extreme flexibility according to the manufacturer, and can be used for graphically presenting and portraying facts and data in a co-related manner.

Items with factors such as time, quantity, percentages, dollars and operations can be related one to the other and each to the overall requirements in such manner that individual item analysis is completely eliminated.

Principle uses of the Trendicator are for inventory, sales, production scheduling and control, the control of parts in assembly, order control, machine and facility loading; functional, project and budget control.

The board has a number of novel features, the principle ones being the colored plastic tapes which may be progressed

from either side of the board, and the master guide chart which enables the user to maintain a graphic picture of current conditions and at the same time built up a permanent historical graphic record. Varied arrangements of colored tapes are available depending upon requirements.

Trendicator also has optional features such as pre-calculated printed strips which make possible 100% accuracy in posting by eliminating the use of reference tables, mechanical or mental calculations, it is claimed.

## ELECTRIC NUMBERING MACHINE



Illustration shows electric office numbering machine which serially numbers office papers, just announced by Wm. A. Force & Company, 216 Nichols Avenue, Brooklyn 8, New York. The operator can feed as fast as desired, the paper tripping the impression unit, and numbers being advanced by plunger on top of machine.

(Please turn to page 282)



UTILIZED by the  
BUSIEST  
PURCHASING AGENTS

MacRae's  
Blue Book

A DIRECTORY OF AMERICAN INDUSTRY . . . FOR ADVERTISING AND BOOK  
RATES, CALL YOUR AGENCY OR WRITE . . . 26 E. HURON ST., CHICAGO 11, ILL.





*To Sum it up  
Quickly...*

...nothing can beat an  
**UNDERWOOD SUNDSTRAND**  
Adding-Figuring Machine

Her fingers ripple over the 10-numeral keyboard  
...touch a motor bar...and there's her total.

It's as simple as that...and as fast.

The keys of the Underwood Sundstrand are arranged in natural sequence under the finger-tips of the right hand. Even untrained operators pick up the "touch" method...after a few minutes' practice.

This machine is quiet, too. Key action has been cushioned...operating noises muffled. There's no annoying jar or clatter to hinder concentration. As a result operators are more relaxed...and more accurate.

Yes, for speed, simplicity, accuracy in adding and figuring you're sure to agree...there's nothing like an Underwood Sundstrand. For a complete demonstration call your nearest Underwood representative today!

**5 Reasons WHY YOU should say**  
*"Underwood Sundstrand"*

**1. SPEED.** World's fastest keyboard. Only 10 numeral keys under the finger-tips of one hand.

**2. EASY TO LEARN.** No long training period for operators. Even untrained personnel learn the "touch" method in a few minutes.

**3. NO HEAD SWINGING.** Operators keep their eyes on their work...*not the keyboard.*

**4. MADE IN MANY MODELS.** Made in sizes and models to fit any business...large or small.

**5. WORLD LEADER.** Backed by 50 years of craftsmanship and research in producing typewriters, adding-figuring and accounting machines which "Speed the World's Business." Sales and service everywhere.

**Underwood Corporation**

Adding Machines . . . Accounting Machines . . . Typewriters . . .  
Carbon Paper . . . Ribbons and other Supplies  
One Park Avenue New York 16, N. Y.  
Underwood Limited, 135 Victoria St., Toronto 1, Canada  
*Sales and Service Everywhere*

Copyright 1947, Underwood Corporation

# The New **BOSTON** *Ranger*

the Pencil Sharpener for  
Today's and Tomorrow's needs



## The **RANGER**

A modern, double-bearing pencil sharpener—creating a totally new standard of sharpening service. Some of its outstanding features are: solid steel cutters with 15 cutting edges • point adjuster giving choice of points, semi-blunt, standard and fine • guide for sharpening pencils of various thicknesses • automatic stop, preventing waste • double-bearing operation for extra-long life • modern styling—the projections usually appearing in pencil sharpeners are eliminated.

The ranger combines rugged construction with beautiful appearance and modern design.



**C. HOWARD HUNT PEN CO.**

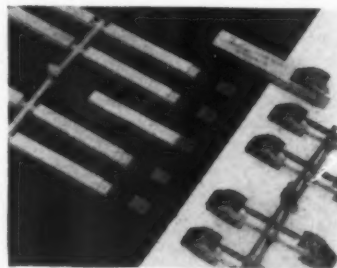
Camden, N. J.

SPEEDBALL PENS

HUNT PENS

## SHEAFFER LEADS PACKAGED IN TWO TYPES OF ACETATE CONTAINERS

**S**HEAFFER Fineline leads are packaged in slender containers of Tenite (cellulose acetate), molded by the Injection Molding Company, Kansas City, Mo. They are of two designs—one, the flip-top package, having streamlined, rounded ends and a hinged lid; the other of conventional oblong shape, with a cap top. Caps and flip tops are blue Tenite, while cases are either bright yellow or black Tenite. Varying sizes of both designs are made and all are stamped and imprinted with the name and type of lead which they contain.



Sheaffer's New Packages

Tenite lead packages are produced by high-speed injection molding and require little finishing beyond removing sprue and runners. The flip-top variety is assembled by fitting two small molded lugs on the top into corresponding holes in the case. The free end snaps shut over the end of the package. The molded cap for the package of conventional design fits snugly on the case by means of tiny projections on both pieces. Such closures are possible because of the resilience of Tenite, and dimensional stability assures proper fit of parts to be assembled.

1 1 1

## USE MAGNETIC WIRE RECORDER IN TAKING INVENTORY

**T**HE combination of wire recorder and IBM machine to take and record an inventory was recently accomplished at the University of Chicago.

The inventory of the University bookstore using a Pierce dictation wire recorder resulted in a speedier and more efficient operation than was even anticipated, according to Albert Andrews of Andrews & Drummond, who carried on the inventory.

### Inventory A Two Step Operation

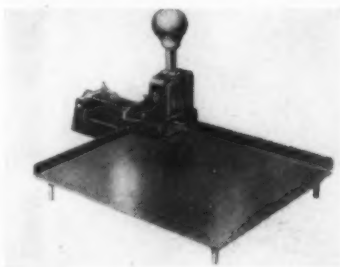
The use of the wire recorder made the inventory a two step operation. First, the checker talked his data on the wire which recorded his voice with no loss of tonal fidelity or volume. Second, the IBM operator transferred the data to IBM cards directly from the machine, since the recorder is geared to office dictation use and is handled easily from foot pedals.

The operators had no difficulty operating the Pierce machine, according to university officials.

Further information is available from the Pierce Wire Recorder Corporation, 1328 Sherman St., Evanston, Illinois.

### NUMBERS THROUGH CARBON COPY FORMS

Hand numbering machine, designed especially for printing through multiple carbon forms, is announced by Wm. A. Force Company, 216 Nichols Ave., Brooklyn, 8, N. Y. The machine is engraved with gothic characters designated style X and fitted with a metal handle to increase the sharpness of the impression.



It will number through 10 to 15 forms

It is mounted on a W. U. 5B style platform. When required to support larger forms extensions tables (as illustrated) are supplied. The combination of features allows uniform and legible impressions through as many as 10 to 15 part forms.

1 1 1

### BROWN PAPER APPOINTS ROCHESTER DISTRIBUTOR

Paper Service, Inc., Rochester, N. Y., has been appointed distributor for the entire line of the L. L. Brown Paper Company's ledgers, linens, bonds and index bristols.

### THE MODERN PLASTIC TYPE CLEANER THAT PRESERVES THE LIFE OF YOUR BUSINESS MACHINES



### USED BY BUSINESS FIRMS THROUGHOUT THE WORLD!

International Business Machines  
Metropolitan Life Insurance Co.  
Prudential Life Insurance Co.  
Eastman Kodak Co.  
Western Electric  
Cheney Silks  
Texas Oil Co.

AT YOUR STATIONERS . . .  
Or WRITE . . .

**NORTA DISTRIBUTING CO.**  
1123 Broadway New York 10, N. Y.

### Prominent Users of Strathmore Letterhead Papers: No. 72 of a Series



### does your letterhead merchandise your product?

Oldest of American watch companies, Waltham has always stood for accuracy. To this Mr. Guilden, new president, adds style.

His company has built their entire sales and advertising strategy on the handsome styling and top prestige of the Waltham watch.

Therefore, it is no mere accident that Waltham chooses Strathmore Parchment for its distinguished letterhead. It is an item, and an important one, in the maintenance of the Waltham prestige.

Does your letterhead do as much for the reputation of YOUR PRODUCT? If not, ask your printer to submit new designs on Strathmore papers.

*Strathmore Letterhead Papers: Strathmore Parchment, Strathmore Script, Thistlemark Bond, Alexandra Brilliant, Bay Path Bond, Strathmore Bond.*

**STRATHMORE** **MAKERS**  
**OF FINE**  
**PAPERS**  
Strathmore Paper Company, West Springfield, Massachusetts



# PERSONALITIES *in the* NEWS

A new Director of Purchases and two new top assistants have been named at The Studebaker Corporation following the election of **P. O. Peterson** as vice-president in charge of manufacturing.



**P. O. Peterson**

**C. N. Rhoutsong**, Assistant Purchasing Agent, succeeds to Mr. Peterson's former position. John Soelch and C. M. Mitchell, both department veterans, have been appointed assistants to the Director of Purchases.

Mr. Rhoutsong joined Studebaker as an expeditor in 1923 and became an assistant purchasing agent in 1941. Mr. Soelch has had 23 years' experience with Studebaker inventory and purchasing. He



**C. N. Rhoutsong**

has been buying materials for truck production. Mr. Mitchell became a materials expeditor in 1933 and since 1941 has been in charge of steel purchases. Mr. Peterson has been with Studebaker 28 years. His election highlights the unique position of the company's purchasing department. As Director of Purchases he managed an organization of 1,200 which handled not only all buying and follow-up, but quality control, inventory and intra-plant transportation of materials.

**C. P. Ebert** has joined the National Cylinder Co., Chicago, Ill., as Director of Purchasing. He was formerly with the Chicago District Purchasing Department of the Carnegie Illinois Steel Corp.

**Arthur D. Friedel** has been appointed Purchasing Agent of Rich's, Inc., Atlanta, Ga. He comes to the department store from Transworld Airlines where he was purchasing supervisor of the international division. He is a veteran of the armed forces.

Mr. Friedel succeeds John Neely who has been appointed to warehouse operations at Candler warehouse.

**James R. Mansfield**, assistant buyer in the Purchasing Department of the Standard Oil Co. of New Jersey, celebrated his



**L. to R.—J. M. Sitler, J. R. Mansfield, A. C. Bedford**

fortieth year with the company on June 26. Mr. Mansfield, who started with the company as an office boy was presented with a button honoring his long service by A. Clarke Bedford, executive vice-president of the company in the office of **J. M. Sitler**, head of the Purchasing Department.

Prior to becoming assistant buyer, Mr. Mansfield was assistant coal purchasing agent. His service with the company actually began on September 1, 1905, but he lost almost eighteen months' time as a result of illness.

**Albert J. Strauss** has been named Purchasing Agent for The Hecht Co., Washington, D. C. Mr. Strauss was associated with the company from 1934 until his entry into the navy in 1942. During the war he was Assistant Chief Procurement Officer, War Shipping Administration Training Organization. He was honorably separated from service last year with the rank of Lieutenant, senior grade.

**A. W. Baird**, Assistant Purchasing Agent of the National Supply Co., Pittsburgh, Pa., since 1944, has been appointed Purchasing Agent for the company's Spang-Chalfant Division. Announcement of the



**A. W. Baird**

promotion was made by H. E. Cooley, Director of Purchases. **J. M. Taylor**, who has been in the Purchasing Department of the company since 1945, has been appointed Assistant Purchasing Agent of the Spang-Chalfant Division. Mr. Baird started with National Supply at the Ambridge plant in 1927.

**R. Paul Wingate**, formerly assistant to Saul Cohn, president of City Stores Mer-



**R. Paul Wingate**

cantile Co., Inc., New York, N. Y., has been appointed Director of Supply Purchasing for the company. He will be in charge of the store supplies and equipment purchasing for the eight units in the company.

Mr. Wingate, who holds a B. S. degree from the Wharton School of Commerce and Finance, University of Pennsylvania, was Chief Expediter of the Ordnance Department, War Department, during the war. Prior to that he was assistant to the

(Please turn to page 286)



**The  
Gear-Maker  
who cut  
his teeth  
22%  
Faster**

**A typical example of how Sun "Job Proved" products help to produce more for less**

Cutting double helical gears for use in steel-mill drives is just one of the big jobs done in a well-known plant specializing in steel-mill equipment.

The management recently reported that production of gears like those shown above increased 22% after they began using a Sun "Job Proved" cutting oil. With this oil lubricating and cooling the cutters, it was possible to increase the speed of the cutting operation and to increase the amount of metal removed at each cut.

In addition, the life of the gear cutters was greatly increased, and the surface finish was the best ever produced in that shop.

Results like this are often obtained where Sun industrial products are properly applied. For Sun "Job Proved" cutting oils, lubricants, processing oils, refrigeration oils, waxes, and solvents, call your nearest Sun office today. Or write Department PU-8

**SUN OIL COMPANY • Philadelphia 3, Pa.**

*In Canada: Sun Oil Company, Ltd.—Toronto and Montreal*

**SUN INDUSTRIAL PRODUCTS**



(Continued from page 284)

chairman of the board of the Bankers Securities Corp., and for 11 years before that a member of the New York Curb Exchange as head of R. P. Wingate & Co.

**Edwin DeMatteo** has been appointed Assistant Purchasing Agent for Western Gear Works, Seattle, Wash., succeeding **Leo Saukko**.

**W. R. McIlvane** has resigned as Purchasing Agent for the Seattle Times to join the sales force of James D. Headley Co. **W. D. Rodbury**, business manager of the paper, is handling purchasing functions.

**John T. Batson** has been appointed Purchasing Agent for Parke, Davis & Company, Detroit, Mich., by the executive committee of the board of directors.

Mr. Batson joined the company in the analytical department in 1919 after serving with the chemical warfare service in World War I. He is a graduate of the University of Illinois with a degree in chemistry.



John T. Batson

In 1920 he was made assistant to the manager of the extract department. In 1923 he joined the control department and was appointed assistant to the chief chemist in 1941. He was appointed by the government to the Office of Production Management in the latter part of 1941 as a special advisor on drugs and he served in various capacities until June, 1945, when he was appointed Chief of the Drug and Cosmetics Branch of the Chemical Bureau of the War Production Board. Returning to Parke, Davis in 1945, he was appointed Assistant Purchasing Agent.

Mr. Batson is a specialist in the chemical phases of purchasing, and is a member of the American Chemical Society.

**Joseph L. Sylvester**, formerly superintendent of the municipal garage, was elected City Purchasing Agent and secretary of Central Purchasing Board of Pawtucket, R. I., at a recent meeting of the board. He succeeds the late Grover Cleveland Haberlin.

**Horace W. Hooker, Jr.** has been appointed Purchasing Agent of the Hooker Electro Chemical Co., Niagara Falls, N. Y. Mr. Hooker has been with the company since 1934, and previously held the position of assistant purchasing agent.

**Theodore J. Brodhead**, Purchasing Agent and business assistant in the Pasadena,

Calif. school system has been chosen for the dual post of managing the Pasadena Chamber of Commerce and the famous Tournament of Roses in that city. He was president of the Pasadena Rotary Club during the past year.

**H. W. Bartley** has been appointed Director of Purchases for the National Enameling and Stamping Company, Milwaukee,



H. W. Bartley

Wis., according to an announcement made by E. G. Gardner, vice-president in charge of manufacturing. The company has factories in Milwaukee; Granite City, Ill.; Baltimore, Md.; Long Island City, N.Y.; and Jacksonville, Ill.

**Stanley B. Pierce** has been appointed Purchasing Agent for H. B. Salter Manufacturing Co., Marysville, Ohio. He was formerly purchasing agent for four years for the S. K. Wellman Co. in Cleveland, and served with the War Assets Administration prior to his present appointment.

Mr. Pierce attended Ohio Wesleyan University, later transferring to and graduating from Ohio University. A native of Knoxville, Tenn., he moved to



Stanley B. Pierce

Cleveland at an early age, and at one time was with the War Manpower Commission in that city.

**Harold W. Catt** has been named manager of the textiles, paper products and advertising purchasing department of B. F. Goodrich Co., Akron, O. according to an announcement by **A. D. Moss**, Director of Purchases. He succeeds **Robert D. Franklin**, who has resigned because of health. Mr. Catt, who was manager of the chemicals and pigments purchasing department, is succeeded in that post by **David L. Flanders**.

**Kenneth L. Booth**, Purchasing Agent for Ward Furniture Mfg. Co., Fort Smith, Ark., has been promoted to the rank of

colonel in the Officers Reserve Corps. Colonel Booth, a graduate of Harvard in the class of 1939, served in the parachute field artillery overseas for 18 months, participating in several campaigns and receiving numerous decorations.

**Victor A. Shea**, former salesman and government department manager, has succeeded **Charles Easton** as Purchasing Agent for Lowman & Hanford, Seattle, Wash. Mr. Shea has been with the company for 26 years.

**W. H. Slater** has been appointed Purchasing Agent for Western Gear Works, Seattle, Wash., to succeed **A. G. Fidell**, who has resigned. Mr. Slater is a mechanical engineer and was formerly a plant engineer with Boeing Aircraft Co.

**W. A. Laubach**, specialty buyer in the purchasing department of The B. F. Goodrich Co., Akron, O., has completed 40 years service with the company. To-



W. A. Laubach

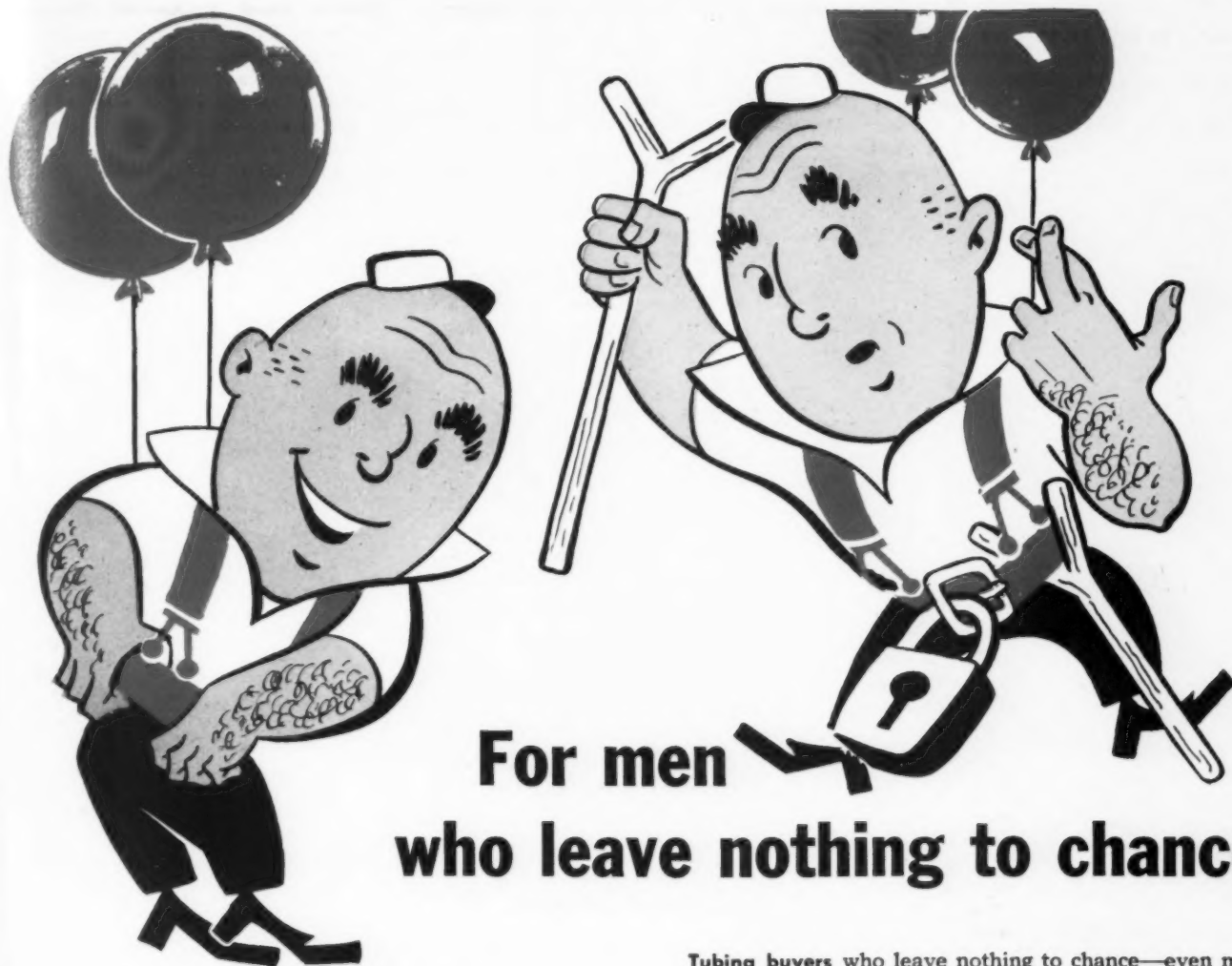
gether with others who had 20, 30 and 40 year anniversaries since January 1, he received his service emblem from John L. Collyer, company president, at a ceremony on June 28, when the Twenty Year Service Club held its 26th semi-annual pin presentation and entertainment.

Mr. Laubach, born in Loyal Oak, joined the company in 1907 as a stenographer in the purchasing department and for the past 38 years has been a buyer in the department. He now purchases lumber, pipe, valves and fittings, and steel.

**A. K. Lowe**, formerly sales engineer for Timken Roller Bearing Co., has succeeded **William R. Lindersmith** as Purchasing Agent for the Young Iron Works, Seattle, Wash. Mr. Lowe was production engineer for the Guide Lamp Division of General Motors, Anderson, Ind. before joining Boeing Aircraft Co. in 1940 as tooling engineer in the tooling department. He served in that capacity and successively as chief die engineer and chief machine tool coordinator until 1941, when he joined Isaacson Iron Works assistant chief engineer. He became associated with Timken in 1946.

**Henry G. Mahoney** has been named Manager of Purchasing in the lighting fixture division of Sylvania Electric Products, Salem, Mass. Mr. Mahoney joined  
(Please turn to page 288)





## For men who leave nothing to chance

### WHY BUNDYWELD IS BETTER TUBING



1 Bundyweld Steel Tubing is made by a process entirely different from that used in making other tubing. A single strip of copper-coated S.A.E. 1010 steel is continuously rolled twice laterally . . .

2 . . . into tubular form. Walls of uniform thickness and concentricity are assured by the use of close tolerance cold rolled strip. This double rolled strip passes through a furnace where the . . .



3 . . . copper coating fuses and alloys with the double steel walls. After brazing and cooling, it becomes a solid double wall steel tube, copper brazed throughout 360° of wall contact . . .

4 . . . copper coated inside and out, free from scale, closely held to dimensions. Hard or annealed in standard sizes up to 5/8" O.D. Special sizes cold drawn. Also in Monel and nickel.

Tubing buyers who leave nothing to chance—even men as cautious as the gremlins above in holding up their pants—are welcome people at Bundy.

The reason for this is plain.

Bundyweld\* Tubing is made to meet requirements in trucks and automobiles, modern freezing units, gas ranges, Diesel engines and other products where tubing is used. Even the most careful buyer can rely on Bundyweld for dependable performance.

Here are some of the more important advantages made possible through the patented Bundyweld process:

- solid, double wall
- great resistance to vibration fatigue
- strength combined with ductility
- uniform tolerances
- ease of fabrication
- high bursting strength for pressure applications
- low cost

Chances are, we can help you on your tubing problems. Write today. Bundy Tubing Company, Detroit 14, Michigan.

REG. U.S. PAT. OFF.

# BUNDY TUBING

★ ★



★ ★

BUNDY TUBING DISTRIBUTORS AND REPRESENTATIVES				
Pacific Metals Co., Ltd. 3100 19th St. San Francisco 10, Calif.	Standard Tube Sales Corp. 7601 Woodhaven Blvd. Brooklyn 27, N.Y.	Lapham-Hickey Co. 3333 W. 47th Place Chicago 32, Illinois	Rutan & Co. 404 Architects Bldg. 3628 E. Marginal Way Phila. 3, Pa.	Eagle Metals Co. 3628 E. Marginal Way Seattle 4, Wash.
				Alloy Metal Sales Ltd. 861 Bay St. Toronto 5, Canada



Fine paper  
says "Hello"—in  
the finest way



FOX RIVER  
Fine Paper

Like the friendly smile,  
the firm handshake, the tipped  
hat . . . fine business stationery  
greet your correspondent the  
*right* way—immeasurably en-  
hancing what you say. Make  
certain with your printer that  
the finest paper represents you.  
FOX RIVER PAPER CORPORA-  
TION, Appleton, Wisconsin.

Cotton Fibre Bond, Ledger, Onion Skin  
"The more Cotton Fibre the finer the Paper"

OUR WATERMARK  
is your quality guarantee

Look through—  
the paper...  
see all three!



1 COTTON FIBRE

2 100 - 75 - 50 or 25%  
COTTON FIBRE CONTENT

3 MADE 'by FOX RIVER'

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Trendicator is the name of new type of visual control board made by L. M. Osborne Co., 45 2nd Street, San Francisco, Calif. It is a mechanical control of extreme flexibility according to the manufacturer, and can be used for graphically presenting and portraying facts and data in a co-related manner.

Items with factors such as time, quantity, percentages, dollars and operations can be related one to the other and each to the overall requirements in such manner that individual item analysis is completely eliminated.

Principle uses of the Trendicator are for inventory, sales, production scheduling and control, the control of parts in assembly, order control, machine and facility loading; functional, project and budget control.

The board has a number of novel features, the principle ones being the colored plastic tapes which may be progressed

from either side of the board, and the master guide chart which enables the user to maintain a graphic picture of current conditions and at the same time built up a permanent historical graphic record. Varied arrangements of colored tapes are available depending upon requirements.

Trendicator also has optional features such as pre-calculated printed strips which make possible 100% accuracy in posting by eliminating the use of reference tables, mechanical or mental calculations, it is claimed.

## ELECTRIC NUMBERING MACHINE



Illustration shows electric office numbering machine which serially numbers office papers, just announced by Wm. A. Force & Company, 216 Nichols Avenue, Brooklyn 8, New York. The operator can feed as fast as desired, the paper tripping the impression unit, and numbers being advanced by plunger on top of machine.

(Please turn to page 282)



UTILIZED by the  
BUSIEST  
PURCHASING AGENTS

MacRae's  
Blue Book

A DIRECTORY OF AMERICAN INDUSTRY... FOR ADVERTISING AND BOOK  
RATES, CALL YOUR AGENCY OR WRITE... 26 E. HURON ST., CHICAGO 11, ILL.



*To Sum it up  
Quickly...*

...nothing can beat an  
**UNDERWOOD SUNDSTRAND**  
Adding-Figuring Machine

Her fingers ripple over the 10-numeral keyboard  
...touch a motor bar...and there's her total.

It's as simple as that...and as fast.

The keys of the Underwood Sundstrand are arranged in natural sequence under the finger-tips of the right hand. Even untrained operators pick up the "touch" method...after a few minutes' practice.

This machine is quiet, too. Key action has been cushioned...operating noises muffled. There's no annoying jar or clatter to hinder concentration. As a result operators are more relaxed...and more accurate.

Yes, for speed, simplicity, accuracy in adding and figuring you're sure to agree...there's nothing like an Underwood Sundstrand. For a complete demonstration call your nearest Underwood representative today!

**5 Reasons WHY YOU should say  
"Underwood Sundstrand"**

**1. SPEED.** World's fastest keyboard. Only 10 numeral keys under the finger-tips of one hand.

**2. EASY TO LEARN.** No long training period for operators. Even untrained personnel learn the "touch" method in a few minutes.

**3. NO HEAD SWINGING.** Operators keep their eyes on their work...not the keyboard.

**4. MADE IN MANY MODELS.** Made in sizes and models to fit any business... large or small.

**5. WORLD LEADER.** Backed by 50 years of craftsmanship and research in producing typewriters, adding-figuring and accounting machines which "Speed the World's Business." Sales and service everywhere.

**Underwood Corporation**

Adding Machines . . . Accounting Machines . . . Typewriters . . .  
Carbon Paper . . . Ribbons and other Supplies

One Park Avenue New York 16, N. Y.

Underwood Limited, 135 Victoria St., Toronto 1, Canada

*Sales and Service Everywhere*

Copyright 1947, Underwood Corporation



# The New **BOSTON** *Ranger*

the Pencil Sharpener for  
Today's and Tomorrow's needs



## The **RANGER**

A modern, double-bearing pencil sharpener—creating a totally new standard of sharpening service. Some of its outstanding features are: solid steel cutters with 15 cutting edges • point adjuster giving choice of points, semi-blunt, standard and fine • guide for sharpening pencils of various thicknesses • automatic stop, preventing waste • double-bearing operation for extra-long life • modern styling—the projections usually appearing in pencil sharpeners are eliminated.

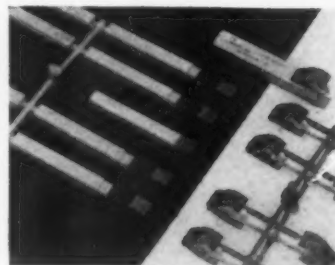
The ranger combines rugged construction with beautiful appearance and modern design.



**C. HOWARD HUNT PEN CO.**  
Camden, N. J.  
SPEEDBALL PENS HUNT PENS

## SHEAFFER LEADS PACKAGED IN TWO TYPES OF ACETATE CONTAINERS

**S**HEAFFER Fineline leads are packaged in slender containers of Tenite (cellulose acetate), molded by the Injection Molding Company, Kansas City, Mo. They are of two designs—one, the flip-top package, having streamlined, rounded ends and a hinged lid; the other of conventional oblong shape, with a cap top. Caps and flip tops are blue Tenite, while cases are either bright yellow or black Tenite. Varying sizes of both designs are made and all are stamped and imprinted with the name and type of lead which they contain.



Sheaffer's New Packages

Tenite lead packages are produced by high-speed injection molding and require little finishing beyond removing sprue and runners. The flip-top variety is assembled by fitting two small molded lugs on the top into corresponding holes in the case. The free end snaps shut over the end of the package. The molded cap for the package of conventional design fits snugly on the case by means of tiny projections on both pieces. Such closures are possible because of the resilience of Tenite, and dimensional stability assures proper fit of parts to be assembled.

1 1 1

## USE MAGNETIC WIRE RECORDER IN TAKING INVENTORY

**T**HE combination of wire recorder and IBM machine to take and record an inventory was recently accomplished at the University of Chicago.

The inventory of the University bookstore using a Pierce dictation wire recorder resulted in a speedier and more efficient operation than was even anticipated, according to Albert Andrews of Andrews & Drummond, who carried on the inventory.

### Inventory A Two Step Operation

The use of the wire recorder made the inventory a two step operation. First, the checker talked his data on the wire which recorded his voice with no loss of tonal fidelity or volume. Second, the IBM operator transferred the data to IBM cards directly from the machine, since the recorder is geared to office dictation use and is handled easily from foot pedals.

The operators had no difficulty operating the Pierce machine, according to university officials.

Further information is available from the Pierce Wire Recorder Corporation, 1328 Sherman St., Evanston, Illinois.

## NUMBERS THROUGH CARBON COPY FORMS

Hand numbering machine, designed especially for printing through multiple carbon forms, is announced by Wm. A. Force Company, 216 Nichols Ave., Brooklyn, 8, N. Y. The machine is engraved with gothic characters designated style X and fitted with a metal handle to increase the sharpness of the impression.



It will number through 10 to 15 forms

It is mounted on a W. U. 5B style platform. When required to support larger forms extensions tables (as illustrated) are supplied. The combination of features allows uniform and legible impressions through as many as 10 to 15 part forms.

**BROWN PAPER APPOINTS  
ROCHESTER DISTRIBUTOR**

Paper Service, Inc., Rochester, N. Y., has been appointed distributor for the entire line of the L. L. Brown Paper Company's ledgers, linens, bonds and index bristols.

**THE MODERN PLASTIC  
TYPE CLEANER THAT  
PRESERVES THE LIFE OF  
YOUR BUSINESS MACHINES**



**USED BY BUSINESS FIRMS  
THROUGHOUT THE WORLD!**

International Business Machines  
Metropolitan Life Insurance Co.  
Prudential Life Insurance Co.  
Eastman Kodak Co.  
Western Electric  
Cheney Silks  
Texas Oil Co.

AT YOUR STATIONERS . . .  
Or WRITE . . .

**NORTA DISTRIBUTING CO.**  
1123 Broadway New York 10, N. Y.

## Prominent Users of Strathmore Letterhead Papers: No. 72 of a Series



does your letterhead  
**merchandise your product?**

Oldest of American watch companies, Waltham has always stood for accuracy. To this Mr. Guilden, new president, adds style.

**H**is company has built their entire sales and advertising strategy on the handsome styling and top prestige of the Waltham watch.

Therefore, it is no mere accident that Waltham chooses Strathmore Parchment for its distinguished letterhead. It is an item, and an important one, in the maintenance of the Waltham prestige.

**Does your letterhead do as much for the reputation of YOUR PRODUCT? If not, ask your printer to submit new designs on Strathmore papers.**

*Strathmore Letterhead Papers: Strathmore Parchment, Strathmore Script, Thistlemark Bond, Alexandra Brilliant, Bay Path Bond, Strathmore Bond.*

**STRATHMORE** *MAKERS  
OF FINE  
PAPERS*  
Strathmore Paper Company, West Springfield, Massachusetts

# PERSONALITIES *in the* NEWS

A new Director of Purchases and two new top assistants have been named at The Studebaker Corporation following the election of **P. O. Peterson** as vice-president in charge of manufacturing.



**P. O. Peterson**

**C. N. Rhoutsong**, Assistant Purchasing Agent, succeeds to Mr. Peterson's former position. John Soelch and C. M. Mitchell, both department veterans, have been appointed assistants to the Director of Purchases.

Mr. Rhoutsong joined Studebaker as an expeditor in 1923 and became an assistant purchasing agent in 1941. Mr. Soelch has had 23 years' experience with Studebaker inventory and purchasing. He



**C. N. Rhoutsong**

has been buying materials for truck production. Mr. Mitchell became a materials expeditor in 1933 and since 1941 has been in charge of steel purchases. Mr. Peterson has been with Studebaker 28 years. His election highlights the unique position of the company's purchasing department. As Director of Purchases he managed an organization of 1,200 which handled not only all buying and follow-up, but quality control, inventory and intra-plant transportation of materials.

**C. P. Ebert** has joined the National Cylinder Co., Chicago, Ill., as Director of Purchasing. He was formerly with the Chicago District Purchasing Department of the Carnegie Illinois Steel Corp.

**Arthur D. Friedel** has been appointed Purchasing Agent of Rich's, Inc., Atlanta, Ga. He comes to the department store from Transworld Airlines where he was purchasing supervisor of the international division. He is a veteran of the armed forces.

Mr. Friedel succeeds John Neely who has been appointed to warehouse operations at Candler warehouse.

**James R. Mansfield**, assistant buyer in the Purchasing Department of the Standard Oil Co. of New Jersey, celebrated his



L. to R.—**J. M. Sittler, J. R. Mansfield, A. C. Bedford**

fortieth year with the company on June 26. Mr. Mansfield, who started with the company as an office boy was presented with a button honoring his long service by A. Clarke Bedford, executive vice-president of the company in the office of **J. M. Sittler**, head of the Purchasing Department.

Prior to becoming assistant buyer, Mr. Mansfield was assistant coal purchasing agent. His service with the company actually began on September 1, 1905, but he lost almost eighteen months' time as a result of illness.

**Albert J. Strauss** has been named Purchasing Agent for The Hecht Co., Washington, D. C. Mr. Strauss was associated with the company from 1934 until his entry into the navy in 1942. During the war he was Assistant Chief Procurement Officer, War Shipping Administration Training Organization. He was honorably separated from service last year with the rank of Lieutenant, senior grade.

**A. W. Baird**, Assistant Purchasing Agent of the National Supply Co., Pittsburgh, Pa., since 1944, has been appointed Purchasing Agent for the company's Spang-Chalfant Division. Announcement of the



**A. W. Baird**

promotion was made by H. E. Cooley, Director of Purchases. **J. M. Taylor**, who has been in the Purchasing Department of the company since 1945, has been appointed Assistant Purchasing Agent of the Spang-Chalfant Division. Mr. Baird started with National Supply at the Ambridge plant in 1927.

**R. Paul Wingate**, formerly assistant to Saul Cohn, president of City Stores Mer-



**R. Paul Wingate**

cantile Co., Inc., New York, N. Y., has been appointed Director of Supply Purchasing for the company. He will be in charge of the store supplies and equipment purchasing for the eight units in the company.

Mr. Wingate, who holds a B. S. degree from the Wharton School of Commerce and Finance, University of Pennsylvania, was Chief Expediter of the Ordnance Department, War Department, during the war. Prior to that he was assistant to the  
(Please turn to page 286)





**The  
Gear-Maker  
who cut  
his teeth  
22%  
Faster**

**A typical example of how Sun "Job Proved" products help to produce more for less**

Cutting double helical gears for use in steel-mill drives is just one of the big jobs done in a well-known plant specializing in steel-mill equipment.

The management recently reported that production of gears like those shown above increased 22% after they began using a Sun "Job Proved" cutting oil. With this oil lubricating and cooling the cutters, it was possible to increase the speed of the cutting operation and to increase the amount of metal removed at each cut.

In addition, the life of the gear cutters was greatly increased, and the surface finish was the best ever produced in that shop.

Results like this are often obtained where Sun industrial products are properly applied. For Sun "Job Proved" cutting oils, lubricants, processing oils, refrigeration oils, waxes, and solvents, call your nearest Sun office today. Or write Department PU-8

**SUN OIL COMPANY • Philadelphia 3, Pa.**

*In Canada: Sun Oil Company, Ltd.—Toronto and Montreal*

**SUN INDUSTRIAL PRODUCTS**



(Continued from page 284)

chairman of the board of the Bankers Securities Corp., and for 11 years before that a member of the New York Curb Exchange as head of R. P. Wingate & Co.

**Edwin DeMatteo** has been appointed Assistant Purchasing Agent for Western Gear Works, Seattle, Wash., succeeding **Leo Saukko**.

**W. R. McIlvane** has resigned as Purchasing Agent for the Seattle Times to join the sales force of James D. Headley Co. **W. D. Rodbury**, business manager of the paper, is handling purchasing functions.

**John T. Batson** has been appointed Purchasing Agent for Parke, Davis & Company, Detroit, Mich., by the executive committee of the board of directors.

Mr. Batson joined the company in the analytical department in 1919 after serving with the chemical warfare service in World War I. He is a graduate of the University of Illinois with a degree in chemistry.



John T. Batson

In 1920 he was made assistant to the manager of the extract department. In 1923 he joined the control department and was appointed assistant to the chief chemist in 1941. He was appointed by the government to the Office of Production Management in the latter part of 1941 as a special advisor on drugs and he served in various capacities until June, 1945, when he was appointed Chief of the Drug and Cosmetics Branch of the Chemical Bureau of the War Production Board. Returning to Parke, Davis in 1945, he was appointed Assistant Purchasing Agent.

Mr. Batson is a specialist in the chemical phases of purchasing, and is a member of the American Chemical Society.

**Joseph L. Sylvester**, formerly superintendent of the municipal garage, was elected City Purchasing Agent and secretary of Central Purchasing Board of Pawtucket, R. I., at a recent meeting of the board. He succeeds the late Grover Cleveland Haberlin.

**Horace W. Hooker, Jr.** has been appointed Purchasing Agent of the Hooker Electro Chemical Co., Niagara Falls, N. Y. Mr. Hooker has been with the company since 1934, and previously held the position of assistant purchasing agent.

**Theodore J. Brodhead**, Purchasing Agent and business assistant in the Pasadena,

Calif. school system has been chosen for the dual post of managing the Pasadena Chamber of Commerce and the famous Tournament of Roses in that city. He was president of the Pasadena Rotary Club during the past year.

**H. W. Bartley** has been appointed Director of Purchases for the National Enameling and Stamping Company, Milwaukee,



H. W. Bartley

Wis., according to an announcement made by E. G. Gardner, vice-president in charge of manufacturing. The company has factories in Milwaukee; Granite City, Ill.; Baltimore, Md.; Long Island City, N.Y.; and Jacksonville, Ill.

**Stanley B. Pierce** has been appointed Purchasing Agent for H. B. Salter Manufacturing Co., Marysville, Ohio. He was formerly purchasing agent for four years for the S. K. Wellman Co. in Cleveland, and served with the War Assets Administration prior to his present appointment.

Mr. Pierce attended Ohio Wesleyan University, later transferring to and graduating from Ohio University. A native of Knoxville, Tenn., he moved to



Stanley B. Pierce

Cleveland at an early age, and at one time was with the War Manpower Commission in that city.

**Harold W. Catt** has been named manager of the textiles, paper products and advertising purchasing department of B. F. Goodrich Co., Akron, O. according to an announcement by **A. D. Moss**, Director of Purchases. He succeeds **Robert D. Franklin**, who has resigned because of health. Mr. Catt, who was manager of the chemicals and pigments purchasing department, is succeeded in that post by **David L. Flanders**.

**Kenneth L. Booth**, Purchasing Agent for Ward Furniture Mfg. Co., Fort Smith, Ark., has been promoted to the rank of

colonel in the Officers Reserve Corps. Colonel Booth, a graduate of Harvard in the class of 1939, served in the parachute field artillery overseas for 18 months, participating in several campaigns and receiving numerous decorations.

**Victor A. Shea**, former salesman and government department manager, has succeeded **Charles Easton** as Purchasing Agent for Lowman & Hanford, Seattle, Wash. Mr. Shea has been with the company for 26 years.

**W. H. Slater** has been appointed Purchasing Agent for Western Gear Works, Seattle, Wash., to succeed **A. G. Fidell**, who has resigned. Mr. Slater is a mechanical engineer and was formerly a plant engineer with Boeing Aircraft Co.

**W. A. Laubach**, specialty buyer in the purchasing department of The B. F. Goodrich Co., Akron, O., has completed 40 years service with the company. To-



W. A. Laubach

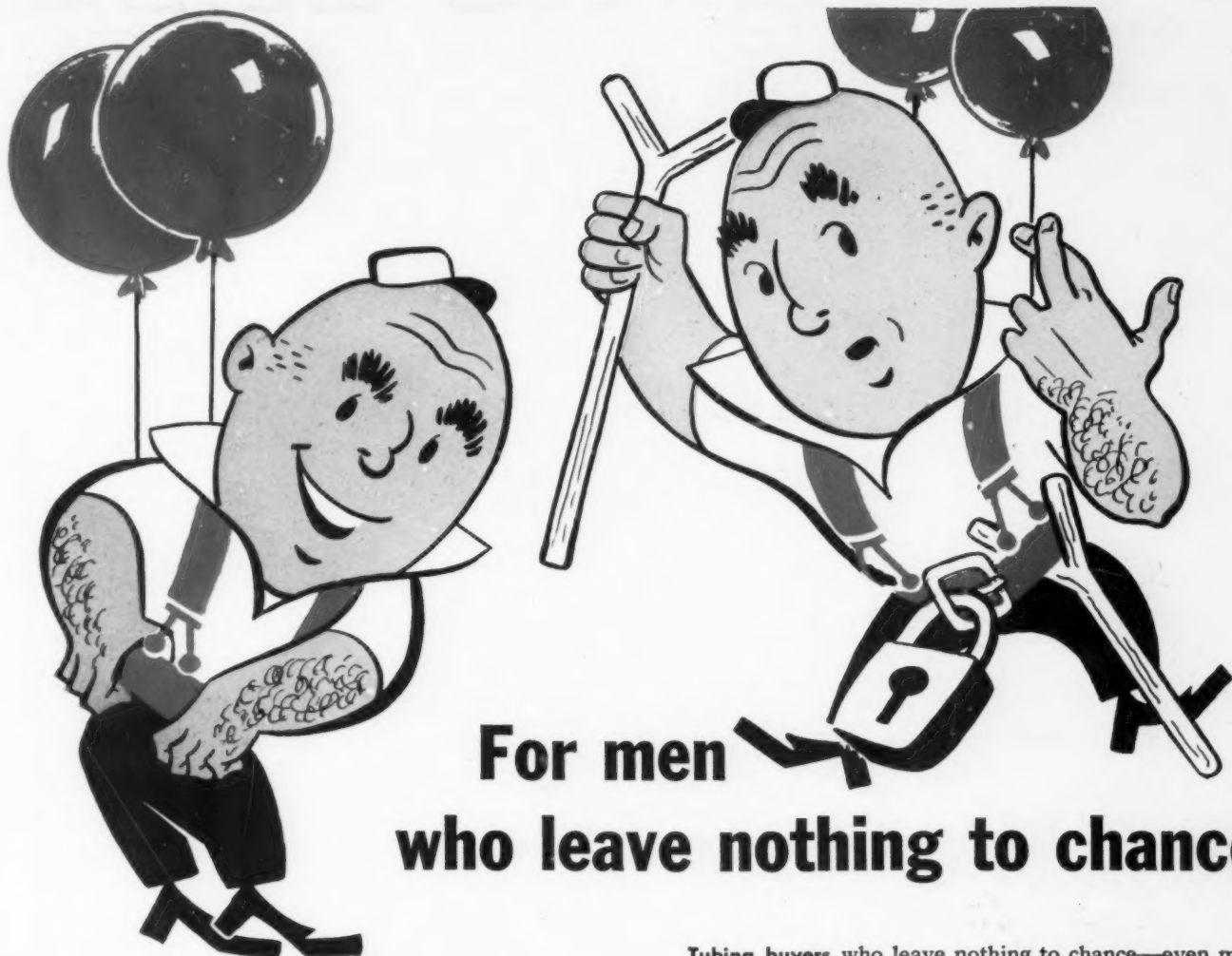
gether with others who had 20, 30 and 40 year anniversaries since January 1, he received his service emblem from John L. Collyer, company president, at a ceremony on June 28, when the Twenty Year Service Club held its 26th semi-annual pin presentation and entertainment.

Mr. Laubach, born in Loyal Oak, joined the company in 1907 as a stenographer in the purchasing department and for the past 38 years has been a buyer in the department. He now purchases lumber, pipe, valves and fittings, and steel.

**A. K. Lowe**, formerly sales engineer for Timken Roller Bearing Co., has succeeded **William R. Lindersmith** as Purchasing Agent for the Young Iron Works, Seattle, Wash. Mr. Lowe was production engineer for the Guide Lamp Division of General Motors, Anderson, Ind. before joining Boeing Aircraft Co. in 1940 as tooling engineer in the tooling department. He served in that capacity and successively as chief die engineer and chief machine tool coordinator until 1941, when he joined Isaacson Iron Works assistant chief engineer. He became associated with Timken in 1946.

**Henry G. Mahoney** has been named Manager of Purchasing in the lighting fixture division of Sylvania Electric Products, Salem, Mass. Mr. Mahoney joined

(Please turn to page 288)



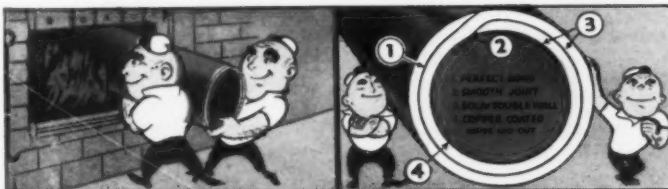
## For men who leave nothing to chance

### WHY BUNDYWELD IS BETTER TUBING



1 Bundyweld Steel Tubing is made by a process entirely different from that used in making other tubing. A single strip of copper-coated S.A.E. 1010 steel is continuously rolled twice laterally ...

2 ... into tubular form. Walls of uniform thickness and concentricity are assured by the use of close tolerance cold rolled strip. This double rolled strip passes through a furnace where the ...



3 ... copper coating fuses and alloys with the double steel walls. After brazing and cooling, it becomes a solid double wall steel tube, copper brazed throughout 360° of wall contact ...

4 ... copper coated inside and out, free from scale, closely held to dimensions. Hard or annealed in standard sizes up to 5/8" O.D. Special sizes cold drawn. Also in Monel and nickel.

Tubing buyers who leave nothing to chance—even men as cautious as the gremlins above in holding up their pants—are welcome people at Bundy.

The reason for this is plain.

Bundyweld\* Tubing is made to meet requirements in trucks and automobiles, modern freezing units, gas ranges, Diesel engines and other products where tubing is used. Even the most careful buyer can rely on Bundyweld for dependable performance.

Here are some of the more important advantages made possible through the patented Bundyweld process:

- solid, double wall
- great resistance to vibration fatigue
- strength combined with ductility
- uniform tolerances
- ease of fabrication
- high bursting strength for pressure applications
- low cost

Chances are, we can help you on your tubing problems. Write today. Bundy Tubing Company, Detroit 14, Michigan.

\*REG. U.S. PAT. OFF.

**BUNDY TUBING**

★ ★  ★ ★

ENGINEERED TO  YOUR EXPECTATIONS

### BUNDY TUBING DISTRIBUTORS AND REPRESENTATIVES

Pacific Metals Co., Ltd.  
3100 19th St.  
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Standard Tube Sales Corp.  
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Brooklyn 27, N.Y.

Lapham-Hickey Co.  
3333 W. 47th Place  
Chicago 32, Illinois

Rutan & Co.  
404 Architects Bldg. 3628 E. Marginal Way  
Phila. 3, Pa.

Eagle Metals Co.  
3628 E. Marginal Way  
Seattle 4, Wash.

Alloy Metal Sales Ltd.  
861 Bay St.  
Toronto 5, Canada



(Continued from page 286)

Sylvania in 1943 as assistant purchasing agent in the appliance division and was later appointed purchasing agent in the lighting fixture division. He was formerly with the American Hide & Leather Co and the New England Electric Supply Co.

Fred K. Schroeder has been named West Allis works Purchasing Agent for foundry products and supplies for Allis-



Fred K. Schroeder

Chalmers, Milwaukee, Wis. He has been with the company since 1942. J. J. Nimitz has been appointed West Allis works Purchasing Agent for steel and mill products. He has been with the company since 1944.

The appointments were made following the resignation of C. W. Berger, former Purchasing Agent for steel products, who left to engage in an enterprise of his own. Schroeder was formerly castings



J. J. Nimitz

and foundry supplies purchasing agent, and Nimitz was in charge of steel expediting.

George H. Walder has been named Chief Purchasing Officer of the Chicago, Milwaukee, St. Paul & Pacific railroad. He succeeds D. C. Curtis who has retired after 27 years' service with the road. Mr. Walder started with the railroad's mechanical department in 1912, advancing to purchasing agent in 1920.

Frank Thielen, Jr., has joined the Houston, Tex. purchasing department of the Diamond Alkali Co. He was formerly assistant purchasing agent with the Emsco Derrick & Equipment Co. Mr. Thielen was a first sergeant with the famous 4th Marine Division during the war.

Charles R. Brown has succeeded Herman M. Grasselt as Purchasing Agent for the American Tissue Mills, Holyoke, Mass. Mr. Grasselt has assumed the position of

assistant to the president, and manager of the company's mills at South Hadley. Mr. Brown was formerly connected with the organization for many years, and returned several months ago as special representative.

John Kiber, Purchasing Agent for the Swift & Co. plant in Dallas, Tex., has been promoted and transferred to the company's purchasing office in Chicago, Ill. A graduate of Texas A & M, he has been with the company for 18 years, five of which were spent in the Fort Worth purchasing office. E. J. Bethel has replaced Mr. Kiber at Dallas.

Harold K. LaRowe has been appointed Acting Director of Purchases for the American Cyanamid Company, with offices at Rockefeller Center, New York, N. Y. Previously he was division purchasing agent. During the recent war he served as purchasing agent of the Chemical Construction Company, a Cyanamid subsidiary in the engineering field. Mr. LaRowe has long been active



Harold K. LaRowe

in purchasing agent association affairs. He became a member of the New York Association in 1929 at which time he was assistant purchasing agent of the Dairy-men's League Cooperative Association. In addition to a range of committee assignments he served two terms as president of the association, and two terms as national director. Last year he was general chairman of the Purchasing Institute, an advanced study and discussion program on purchasing policy and administrative problems. In National Association affairs he served as regional chairman of the National Fuel Oil Committee, as a member of the Shipman Medal Award committee, publicity committee for the 1935 convention, and chairman of the hotels committee for the 1942 convention.

Phil Bannon, former Purchasing Agent at Seattle and recently manager at Los Angeles, is now the manager at Seattle for the Western Gear Works.

George W. Reach, former assistant storekeeper, has been named storekeeper and Purchasing Agent for Ginnell Co. of the Pacific, Seattle, Wash. He succeeds James F. Mellon, resigned.

Charles M. Young, Purchasing Agent for the Crise Manufacturing Co., Columbus, O., was recently elected assistant secretary in a reorganization of the company.

Colonel Frank J. Atwood, Director of Procurement, Inventory and Control of Remington Rand, Inc., New York, N. Y., has been named a vice-president of the company in "recognition of outstanding accomplishments during the past year."

Colonel Atwood's outstanding war time service as Chief of the Rochester Ordnance District an area covering all of New York state with the exception of the metropolitan area, won for him special citations from the War Department



Frank J. Atwood

and the Empire Post of the Army Ordnance Association. During this period he was responsible for the purchase production, inspection and shipment of war materials valued in billions of dollars, varying from heavy tanks to intricate optical equipment.

H. N. Leuckel has been named Purchasing Agent for Nelson Electric Corporation, transformer manufacturers of Santa



H. N. Leuckel

Monica, Calif., according to an announcement by A. L. Nelson, president of the new corporation. Mr. Leuckel, who lives in Los Angeles was formerly chief purchasing agent for Air Communications, Inc., Kansas City, Mo.; assistant chief purchasing agent for Aircraft Accessories for four and one half years, and prior to that was in business for himself.

F. E. Godbois, formerly purchasing agent for Engineering Laboratories, Tulsa, Okla., has been named to a procurement position with the Applied Physics Laboratory, Johns Hopkins University, Silver Springs, Md.

H. R. Beeson has succeeded C. A. Wattson as Purchasing Agent of the Norm-Hoffman Bearings Corp., Stamford, Conn.

(Please turn to page 290)

## A simple twist of the wrist...

1253

952

## ... and pressure is under control

● Here are two Fulton Sylphon regulators . . . job-proved by engineers and contractors in your industry . . . for solving pressure problems in steam, air, water or oil lines.

On the left is the No. 1253 with packless, all-metal construction. Single-seated valve for dead-end service—may be held in wide open position. Requires no "feeler" pipe. Reduced pressure ranges—20 to 100 lbs. and 30 to 150 lbs.

Shown with it is the No. 952 which is used as an automatic pressure regulator for reduc-

ing from high to low pressure—or to insure a constant delivery pressure when supply fluctuates. Equipped with direct-acting type valve (closes with rising pressure). Maximum initial pressure—150 lbs.; maximum controlled pressure—100 lbs.

Both are handwheel, spring adjusted . . . equipped with Sylphon metal bellows . . . rugged, reliable, long-lasting. Both are backed by 45 years of specialized experience. For complete information, write today for Catalog PO-100.



FIRST WITH BELLOWS

THE FULTON SYLPHON CO. KNOXVILLE 4, TENN.

# FULTON SYLPHON

*Temperature Controls • Bellows Devices • Bellows Assemblies*

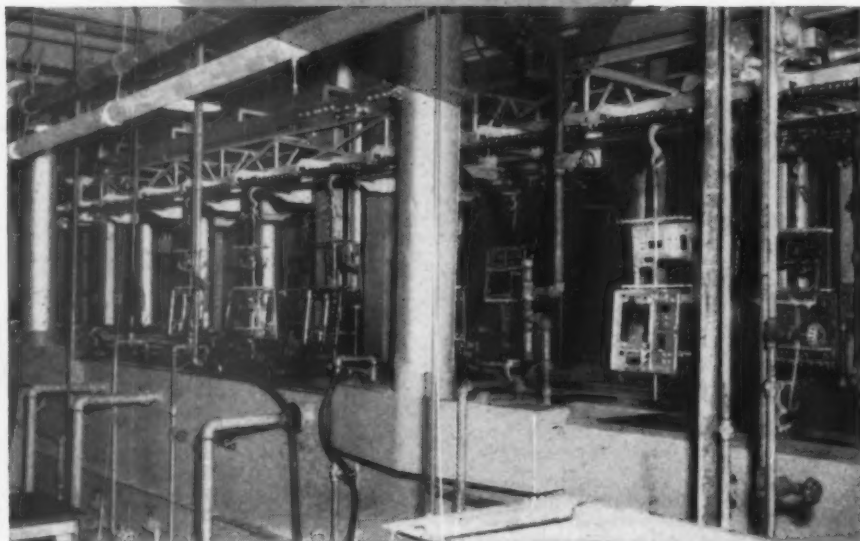
*Canadian Representatives, Darling Brothers, Montreal*

# Friden Automatic Calculator Parts

*Finished  
IN A  
Udylite*



## FULLY AUTOMATIC PLATING MACHINE



*The plating machine installed here is the one hundredth of its kind constructed and sold within 18 months by Udylite*

The Friden Calculating Machine Co. of San Leandro, California is now cadmium plating the parts for its product in this Udylite Fully Automatic Plating Machine.

Production rates are 180 large parts, bases, etc., or 6400 smaller parts per hour. The machine completes one cycle every 18 minutes during which the parts are not touched from the time they are racked until they are unloaded and ready for assembly or storage.

This machine operated by one plater is fully adjustable for any plating cycle desired. It turns out the production which previously required five hand platers. It assures uniformly plated parts and it occupies less floor space than would be required by any other method.

*Udylite*

**THE UDYLITE CORPORATION**

**DETROIT 11, MICHIGAN**

REPRESENTED IN PRINCIPAL CITIES

*(Continued from page 288)*

J. C. Breyer is the Director of Purchases for the Paul M. Wiener Foundry Co., Montague, Mich., the new corporate name of the Montague Castings Co.

Charles O. Auslander, former director of purchases at Michael Reese Hospital, Chicago, Ill., has been appointed Director of Purchases of the Joint Purchasing Corporation of the Federation of Jewish Philanthropies of New York. Mr. Auslander will supervise buying for 193 voluntary health and welfare institutions in the city.



Charles O. Auslander

The founder and a past president of the Chicago Hospital Buyers Association, Mr. Auslander is vice-chairman of the National Committee on Purchasing, Standardization and Simplification of the American Hospital Association. He lectured on hospital purchasing at Northwestern University from 1945 to 1947.

Mr. Auslander has estimated that the J.P.C. will make purchases totalling several million dollars during the current year, buying items from toys to X-ray machines and carloads of coal. Established 18 years ago as the first organization of its kind in the city, the J.P.C. has advised other groups here and in other cities on how to set up similar organizations.

Rafael Rios, formerly of P. R. Rincones, Jr., Co., has been appointed Purchasing Officer and dispatch agent for the General Supplies Administration of the Government of Puerto Rico, with offices in New York city.

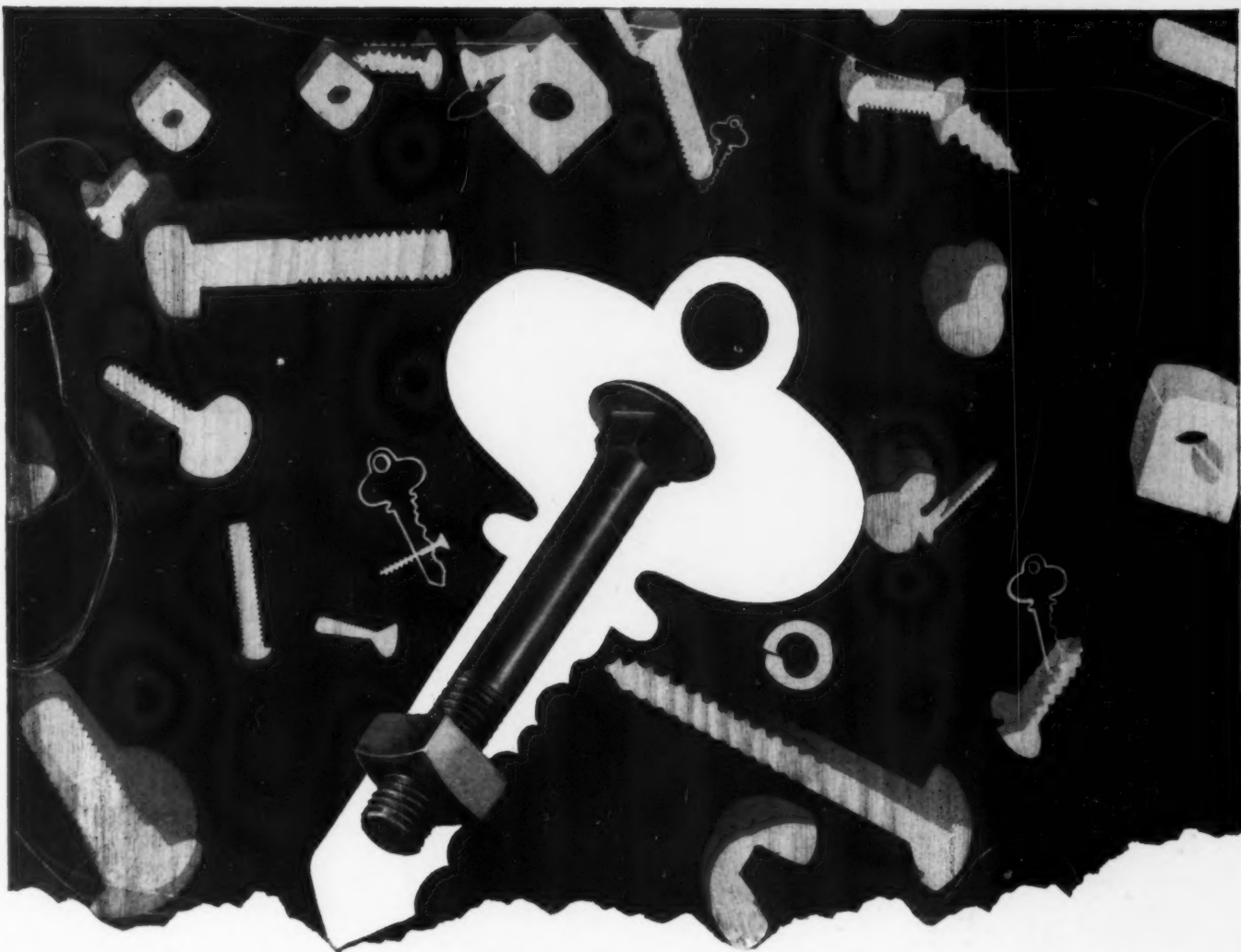
B. V. Brown, Manager of Purchasing and Stock Control, Supply Stores Division of International Derrick Co., Dallas, Tex., has been transferred to the Export Division, with offices in New York city.

James F. Mellison, formerly with Grinnell Co. of the Pacific, has been named Purchasing Agent for W. E. Beggs Co., Seattle, Wash.

Frank Shipman has succeeded W. H. Taylor as Purchasing Agent for Puget Sound Auto Electric Co. of Tacoma and Puyallup, Wash.

Harrison Parkman, Purchasing Agent for the U. S. Post Office Department, Wash. (Please turn to page 292)





## Keys to PRODUCTION

If bolts or nuts, screws or rivets are used in your product, you know how important they can be.

The right kind of metal fastenings—uniform and dependable—can unlock the door to easier assembly, faster production and better appearance. For more than a quarter century, Sterling Bolt Company has supplied industry with exactly the right kinds of bolts, nuts, screws, rivets, washers.

Remember Sterling—it's a reliable name in the metal fastening business, and good metal fastenings are your vital key to better, faster production.

*During these times of scarcity, you may find items available in our stocks which would help you through production problems. Inform us of your needs and write for a copy of our current stock list.*

**Sterling makes a wide variety of metal fastenings, both standard and special. All metals...all finishes...all sizes.**

### **BOLTS**

Carriage  
Machine  
Plow  
Step  
Elevator  
Lag  
Stove

### **NUTS**

Square • Hexagon  
Cold-punched  
Hot-pressed  
Semi-finished

### **SCREWS**

Cap • Set  
Machine  
Socket Head



# STERLING BOLT COMPANY

201 W. Jackson Blvd., Chicago 6, Ill. • Harrison 9880

#### SALES OFFICES:

Union Trust Bldg.,  
Cincinnati 2, Ohio

17 W. Market St.,  
Indianapolis 4, Indiana

161 W. Wisconsin Ave.,  
Milwaukee 3, Wisconsin

1228 N. Hadley St.,  
St. Louis 6, Missouri



# ILLINOIS COIL SPRING COMPANY

**Offers  
Especially Prompt  
DELIVERY—  
Especially Good  
VALUE—  
ON ANY TYPE OF HIGH  
GRADE MECHANICAL  
SPRING**

Sizes .005" to 1/2" Diameter Wire



**REASON:—** we have special automatic equipment that enables us to eliminate operations on many spring jobs—cutting costs materially—with faster, more uniform production. May we quote? Call or write . . .

**TELEPHONE BERKshire 6461**

2100 N. MAJOR AVE. CHICAGO 39, ILL.

(Continued from page 290)

ington, D. C., was a featured speaker at the annual meeting of the Kansas chapter of the National Association of Postmasters, held in Topeka May 27-30.

James A. Billings, treasurer and Director of Purchases for the Payson Manufacturing Co., Chicago, Ill., and widely known in hardware manufacturing and purchasing agents' circles, has been elected to the Board of Directors of the Chicago Association of Credit Men.



J. A. Billings

Mr. Billings was the first graduate of St. Vincent's Academy, which later became DePaul University. In 1893, he became associated with the Central Freight Association as a rate clerk and remained there until 1904 when he was appointed chief clerk in the Purchasing Department of the American Bridge division of the United States Steel Corp. Shortly after the division offices were moved to Pittsburgh, he resigned and became treasurer of the Dearborn Hardware Manufacturing Co., which in 1915 was consolidated with the Payson Manufacturing Co. He has been treasurer and Director of Purchases of the company since then. Soon after joining the Purchasing Agents Association of Chicago 29 years ago, Mr. Billings was elected to the Board of Governors. Later he was twice elected to every office in the association except secretary, and refused the nomination for president on both occasions. His first term of office lasted 12 years. For 15 years he has been chairman of the Arbitration Committee of the National Association of Purchasing Agents, and has served on other committees. He has been appointed to numerous committees of the Chicago Association of Credit Men and is now chairman of the Reporting Agencies Committee. He was active in the formation of the Chicago Hardware Club, which later became the Central States Hardware Club.

George A. Millard, for more than 20 years a vice-president of the Fuller Brush Co., died recently, in Hartford, Conn. Mr. Millard joined the company in 1919 as a purchasing agent and was named a director the following year. In 1923 he was elected vice-president and appointed Director of Purchases. A short time later he took charge of the industrial sales division.

(Please turn to page 296)



**PREFERRED BY THE  
MAN ON THE JOB**

## TIGER GRIP

*The Work Glove that Outwears Several  
Pairs of Ordinary Woven Fabric Gloves*

The man on the job has found that "TIGER GRIP" gives him more of everything he expects from a work glove! "TIGER GRIP" gives him *more* protection—because its specially knitted material contains hundreds of "loops" in every square inch, to cushion and protect the hand. He gets *more* wear—because these entirely different gloves outlast several pairs of ordinary woven fabric gloves! And he gets washability without excessive shrinkage! Treated with Johnson's "DRAX" to make it water repellent! ADVANCE Work Gloves are laboratory tested, and re-tested under actual working conditions!



**Send For New  
CATALOG**

Big, new catalog lists full line of ADVANCE work gloves including leather palm gloves, wire stitched gloves, welder's gloves, etc., as well as a complete line of safety and protective clothing for every industry.

"A Better Work Glove For Every Purpose"

## ADVANCE

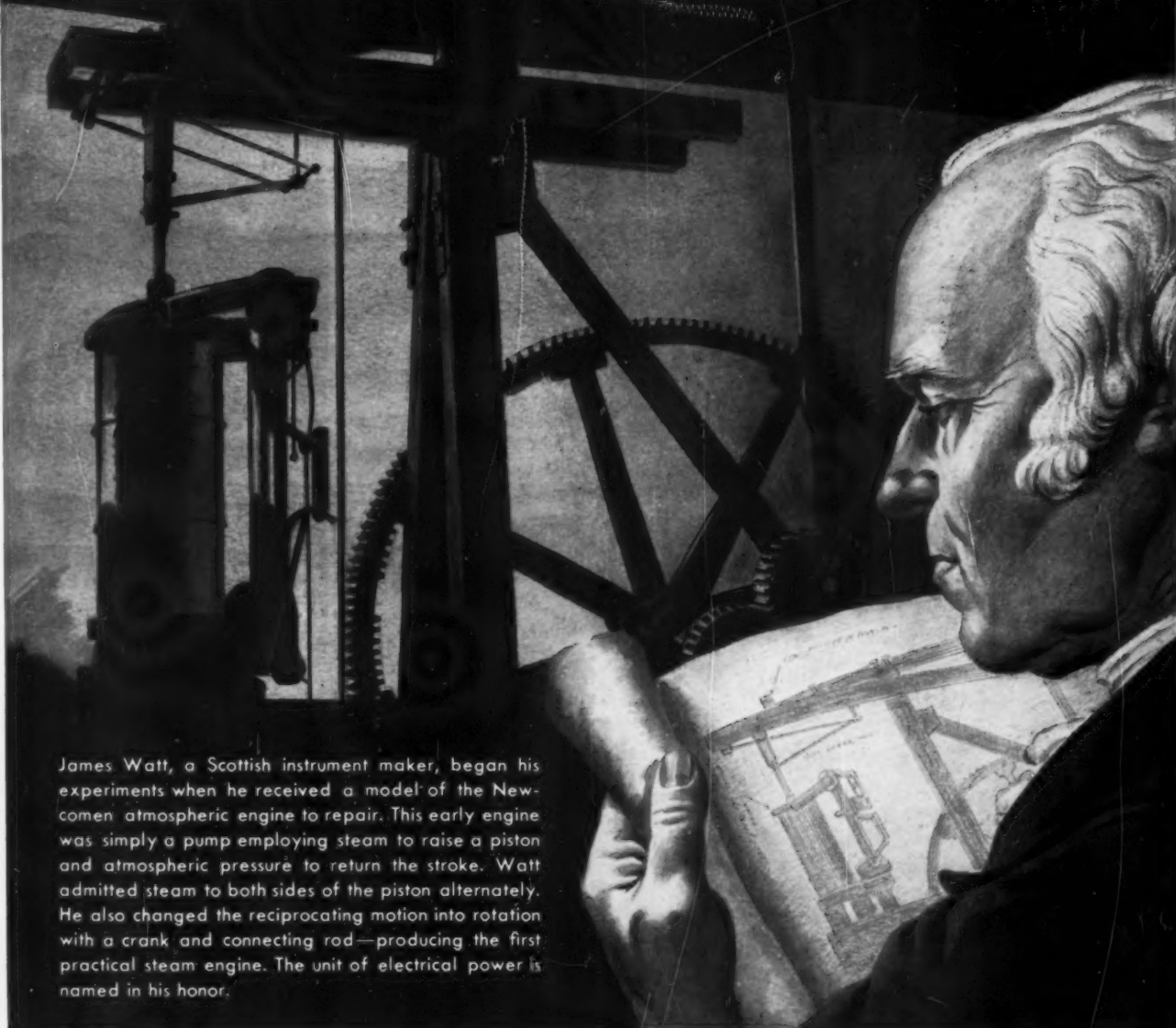
GLOVE MANUFACTURING CO.

DEPT. P-7, 901 W. LAFAYETTE BLVD.  
DETROIT 26, MICH.

Detroit • Toledo • Chicago • Rome, Ga.

James Watt—(1736-1819)

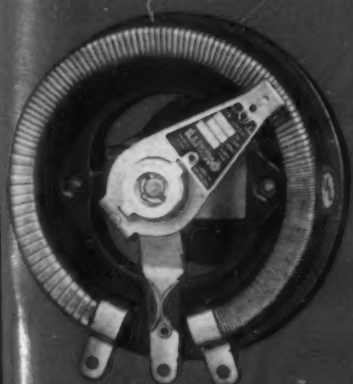
**FIRST** to build a practical steam engine



James Watt, a Scottish instrument maker, began his experiments when he received a model of the Newcomen atmospheric engine to repair. This early engine was simply a pump employing steam to raise a piston and atmospheric pressure to return the stroke. Watt admitted steam to both sides of the piston alternately. He also changed the reciprocating motion into rotation with a crank and connecting rod—producing the first practical steam engine. The unit of electrical power is named in his honor.

**OHMITE...**

**FIRST** in rheostats... today



More manufacturers have standardized on Ohmite rheostats for their products . . . more companies are buying these rheostats for their own use . . . than any other make on the market today. One of the important reasons for this preference is that Ohmite rheostats have established a reputation for dependability under frequent service and adverse operating conditions. It will pay you to standardize on Ohmite rheostats for your product.

Be right with OHMITE • Rheostats • Resistors • Tap Switches



# OHMITE

## Close Control

# RHEOSTATS



... Available with  
many additional  
features

On this page are shown some of the many forms in which standard Ohmite rheostats can be furnished. All models have the distinctive, time-proved features of Ohmite design. They are all-ceramic in construction—ceramic parts insulate the shaft and mounting, and the resistance winding is permanently locked in place by vitreous enamel. Smoothly-gliding, metal-graphite brush provides contact with every turn of the resistance winding. Ohmite rheostats are known for their smooth, gradual, close control and their long, trouble-free life.

Write for Catalog and Engineering Manual No. 40, on your letterhead. It contains information on the complete Ohmite line, plus a wealth of helpful engineering information.



*Be Right with...*

**OHMITE**  
RHEOSTATS • RESISTORS  
TAP SWITCHES

*Industry's First Choice*

OHMITE MANUFACTURING COMPANY

4903 Flournoy Street — Chicago 44, Illinois

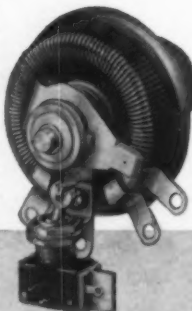
### in TABLE MOUNTING CAGES

Used to prevent mechanical injury to the rheostat or human contact with electrically "live" parts. Tabletop mounting, ventilated enclosures.



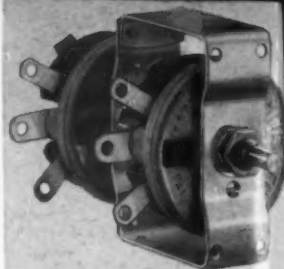
### with TOGGLE SWITCH and EXTRA LUG

Permits dual switching of rheostat and independent circuits. Rheostat winding is terminated at an extra lug located where the switch opens.



### TANDEM ASSEMBLIES

Ohmite rheostats can be mounted with two, three, or more in tandem, for simultaneous operation of several circuits by one knob.



### with BUSHINGS for special panel thickness

Rheostats can be furnished with extra-long bushings and shafts for panels over 1/4" and up to 2" in thickness. Five bushing lengths.



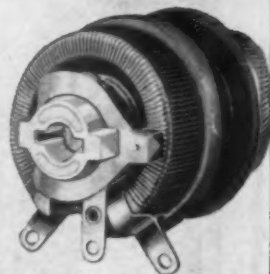
### with SCREW DRIVER SLOT SHAFT

Shaft ends can be slotted for operation with a screwdriver, where few adjustments are needed. Minimizes tampering with setting.



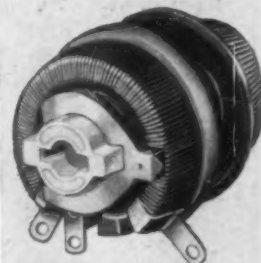
### with DEAD LUG OFF-POSITION

Opens the circuit at the high resistance position as the contact passes on to the lug, which is disconnected from the winding.



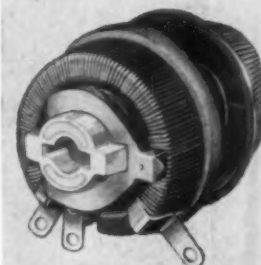
### with SNAP-ACTION OFF POSITION

Opens the circuit at the high or low resistance position. The contact brush snaps into an insulated notch next to the lug, providing indexing.



### with DEAD-SECTION OFF POSITION

Opens the circuit at the high or low resistance position as the brush passes off the lug onto an insulated section. Medium duty.



### with TOGGLE SWITCH

Toggle switch is operated with a positive snap by the rheostat arm at either end position. Used for heavy duty applications.



# PURCHASE ORDER THE JOHN DOE SUPPLY CO. CLEVELAND, OHIO

Purchase Order No. 1111  
December 10, 1945

TO - The Ferry Cap & Set Screw Co.  
2151 Scranton Road  
Cleveland 13, Ohio

Please enter order and ship as follows:

Ship to US

10,000 1/4 -20 x 1-1/2" Hexagon Head Cap Screws - C-1038 Steel  
Bright Finish - National Coarse Thread  
Ditto

10,000 1/4 -20 x 1-3/4"  
5,000 3/8 -16 x 1"  
2,000 3/8 -16 x 3"  
10,000 7/16 -14 x 1-3/4"  
10,000 7/16 -14 x 2-1/2"  
1,000 7/16 -14 x 3"  
10,000 7/16 -13 x 1-1/2"  
10,000 1/2 -13 x 2"

500 1/4 -28 x 1"  
10,000 1/4 -28 x 1-1/2"  
1,000 3/8 -24 x 1"  
1,000 3/8 -24 x 1-1/4"  
2,000 3/8 -24 x 1-1/2"  
2,000 3/8 -24 x 1-3/4"  
1,000 3/8 -20 x 1-1/2"  
5,000 1/2 -20 x 1-1/2"  
7,500 3/4 -16 x 1-1/2"  
10,000 3/4 -16 x 2"

Hexagon Head Cap Screws - C-1038 Steel  
Heat Treated - Black Finish - National Fine Thread  
Ditto

**THE LONG WAY**

# PURCHASE ORDER THE JOHN DOE SUPPLY CO. CLEVELAND, OHIO

Purchase Order No. 1112  
December 10, 1945

TO - The Ferry Cap & Set Screw Co.  
2151 Scranton Road  
Cleveland 13, Ohio

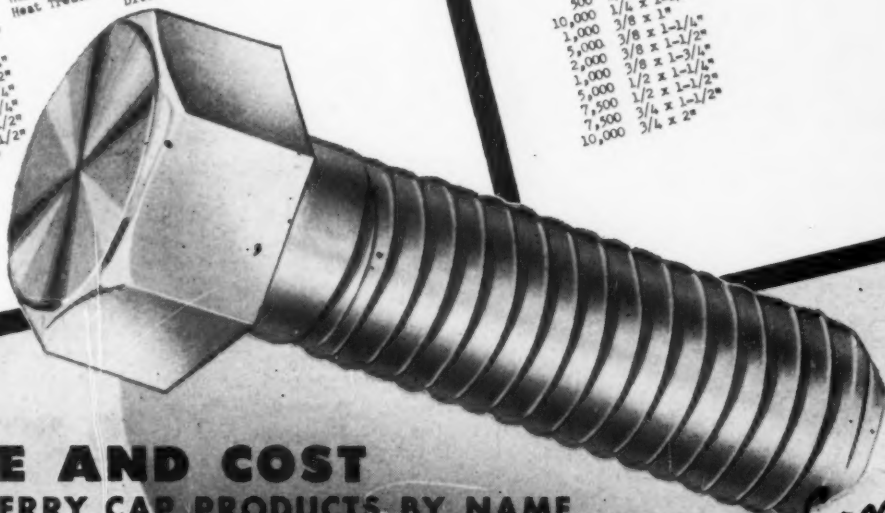
Please enter order and ship as follows:

Ship to US

SHINYHEADS NC  
10,000 1/4 x 1-1/2"  
10,000 1/4 x 1-3/4"  
5,000 3/8 x 1"  
2,000 3/8 x 3"  
10,000 7/16 x 1-3/4"  
10,000 7/16 x 2-1/2"  
1,000 7/16 x 3"  
10,000 7/16 x 1-1/2"  
10,000 1/2 x 2"

HI-CARBS NF  
500 1/4 x 1"  
10,000 1/4 x 1-1/2"  
1,000 3/8 x 1"  
2,000 3/8 x 1-1/4"  
2,000 3/8 x 1-1/2"  
1,000 3/8 x 1-3/4"  
5,000 1/2 x 1-1/2"  
7,500 3/4 x 1-1/2"  
10,000 3/4 x 2"

**THE SHORT WAY**



## SAVE TIME AND COST BY ORDERING FERRY CAP PRODUCTS BY NAME

You can save time, effort and cost by ordering Shinyheads and Hi-Carbs by name. No need to write up the order the long way giving unnecessary details. The Ferry Cap trade name, as indicated below, is its own specification and your guarantee.

Simply specify— **Shinyheads NC** or **Shinyheads NF**

Shinyheads mean hexagon head cap screws of high carbon C-1038 steel—full finished—bright, shiny heads—NC or NF thread.

Simply specify— **Hi-Carbs NC** or **Hi-Carbs NF**

Hi-Carbs mean hexagon head screws of high carbon C-1038 steel, double heat treated, black satin finish, NC or NF thread.

These Ferry Cap products are carried in stock in popular catalog sizes in bulk and in attractively labeled packages. When ordering from your distributor, simply specify Shinyheads or Hi-Carbs or both.

*Simply Specify*

**Shinyheads**  
NC or NF Thread

**Hi-Carbs**  
NC or NF Thread

## The FERRY CAP & SET SCREW Co.

2165 SCRANTON ROAD

CLEVELAND 13, OHIO

CAP AND SET SCREWS • CONNECTING ROD BOLTS • MAIN BEARING BOLTS • SPRING BOLTS AND SHACKLE BOLTS • HARDENED AND GROUND BOLTS • SPECIAL ALLOY STEEL SCREWS • VALVE TAPPET ADJUSTING SCREWS • AIRCRAFT ENGINE STUDS • ALLOY STEEL AND COMMERCIAL STUDS • FERRY PATENTED ACORN NUTS

## DOES YOUR VOICE COMMAND ATTENTION?



Nothing to  
Plug In ...  
Nothing to  
Connect ...  
Just Pick up  
the Mike and  
Talk . . . . .

### AMAZING! PORTABLE P. A. SYSTEM

Meet practically every need with this powerful, fully portable, battery operated Public Address System. Perfect for sales meetings, group instruction, crowd control, and industrial plant use. Excellent sound amplification. Unit weighs only 12 lbs. complete with batteries. Can be used anywhere—walking, standing or riding. The Siltronic Company, Point Bldg., Pgh., Pa.



**\$75.10 complete with batteries**  
(Slightly higher west of Rockies)

The Siltronic Co.  
Point Building, Pgh., Pa., Dept. P  
I'm interested in the Siltronic Portable, Battery  
operated Public Address System.

- ☐ Send me ..... PA-4's at \$75.10 ea.  
\$75.10 ea. west of Rockies (complete  
with batteries).  
☐ Cash ☐ Check ☐ C. O. D.  
☐ Send me descriptive literature.

Name .....

Address .....

City .....

State .....

## AMONG THE COMPANIES YOU BUY FROM

**Portland, Ore.**—National Motor Bearing Co., Inc. W. T. Kellogg, Jr., formerly personnel manager for the company at Redwood City, Calif., has assumed new duties as replacement division sales representative in the Northwest. He will handle replacement sales in Oregon, Washington and Idaho.

**Plymouth, Mich.**—Evans Products Co. William J. Ritchie has been appointed sales manager for the western division.

**Chicago, Ill.**—Dearborn Chemical Co. E. T. Erickson, for the past three years chemical engineer in the Industrial Water Treating Division, has been placed in charge of the Chicago city sales department.

**Harvey, Ill.**—The Buda Co. Fred W. Sparks has joined the company as district representative to handle the Ohio territory for the manufacturer's engine division.

**Chicago, Ill.**—Minneapolis - Honeywell Regulator Co. The Chicago regional office of the company and its industrial division, the Brown Instrument Co. has moved to new quarters at 351 East Ohio St.

**Cincinnati, O.**—Crosley Division, Avco Manufacturing Corp. William R. Shipley has been made eastern regional manager. He served as manager of major accounts at the company from 1937 to 1940.

**Philadelphia, Pa.**—The Baldwin Locomotive Works. Roland C. Disney, formerly manager of eastern district sales, has been promoted to the position of assistant general sales manager. Edwin R. Wisner succeeds Mr. Disney.

**Philadelphia, Pa.**—Mixing Equipment Co. The Maleson Co. has taken over the entire territory formerly handled by J. E. Snyder, who has retired. In addition its engineers will cover the southern section

of New Jersey, all Delaware, and the major portion of Maryland and eastern central Pennsylvania formerly handled through the New York office.

**Boston, Mass.**—Hammel-Dahl Co. Frank J. and Arthur T. Carr, under the name The Carr Bros. Co., have been appointed New England sales representatives.

**Detroit, Mich.**—E. W. Bliss Co. Harry T. Burke, formerly chief engineer of the Brooklyn, N. Y. plant, has been appointed assistant to the general sales manager, with headquarters at the company's new general offices, 450 Amsterdam Ave.

**New York, N. Y.**—Oakite Products, Inc. Sterling E. Killebrew has been named manager of the Railway Service division,



Sterling E. Killebrew

succeeding Bennett C. Browning. He will direct the activities of field representatives from new divisional headquarters at 22 Thames St.

**Chicago, Ill.**—Container Laboratories, Inc. Richard J. Cody, formerly sales manager of the Container Corp. of America, has joined the company staff.

**Detroit, Mich.**—The Emerson Electric Mfg. Co. The Detroit and Michigan district office is in new quarters at 1375 East Jefferson Ave.

**Boston, Mass.**—The Wiremold Co. Robert T. Bennett has been appointed the company's New England district sales manager, with offices at 10 High St.

(Please turn to page 298)

### INFORMATION for Purchasing Agents on STAINLESS WELDING FITTINGS

Pittsburgh Piping Stainless Welding Elbows simplify piping fabrication and save valuable time. Made in 90° and 45° styles in Stainless Type Nos. 308, 316, 317, and 347. Sizes 3/4" to 8". Bulletin S-306 describes the complete line.

*Write for your copy*

Write for your copy.

**PITTSBURGH PIPING & EQUIPMENT CO.**

**10 FORTY-THIRD ST.,  
PITTSBURGH, PA.**





## PICTURE OF A BOSS WHO HAS JUST TESTED 497 DIFFERENT SKIN CLEANSERS AND FOUND THE ONE WHICH HAS REALLY BEEN IMPROVED

Fortunately you won't have to put in so much effort to find the skin cleanser your employees should be using. You can do it the easy way by taking a tip from the medical and safety directors of many of America's largest factories, and specify either of these improved Pax Extra-Quality Skin Cleansers. They incorporate all the latest scientific developments including those exclusive betterments from Pax own great Research Laboratory.

### IF YOU WANT THE VERY FINEST...

—order Paxlanosav Heavy Duty. Exceeds every established standard for safe skin cleansers. Incorporates Paxlanosav Blended Emollient—a "plus" blend of beneficial oils including lanolin, to help prevent dryness, chapping, other forms of skin irritation, and really serious dermatitis.

ADVERTISED  
"AMERICAN MEDICAL  
ASSOCIATION  
PUBLICATIONS"

### PAXLANOSAV\* HEAVY DUTY GRANULATED SKIN CLEANSER

### IF IT'S LOW PRICE YOU WANT...

—buy Pax Hyspeed. It sets the pace for all other granulated skin cleansers, both in price and quality, that do not contain an emollient. In addition to the finest ingredients for safe and thorough cleansing efficiency Hyspeed can't be beat for real economy because of its extra efficiency and exceptional bulk.

### PAX HYSPEED GRANULATED SKIN CLEANSER



A Request On Your Letterhead Will Get You All The Details

Use Pax IMPROVED Safety Skin Cleansers  
For ALL General Skin Cleansing Needs

**PAX**

G. H. PACKWOOD MFG. CO. •

1545-35 TOWER GROVE AVE.  
ST. LOUIS 10, MISSOURI

TRADEMARK REG. U. S. PAT. OFF.

When you purchase any Pax Product you also purchase the experience and ability of Pax Technicians acquired through 21 years of exhaustive research and development.

For workers in occupations requiring contact with severe skin-defatting solvents, one extra dispenser may be installed in the washroom if desired for **PAX SULPHONATED OIL SKIN CLEANSER**, which contains lanolin, to finish the wash **after PAXLANOSAV HEAVY DUTY GRANULATED SKIN CLEANSER** has been used to safely and thoroughly remove all dirt and skin irritants.

\*Trademark of G. H. Packwood Mfg. Co.

# RITCO

## DIESEL BOLTS

RITCO Diesel Engine Bolts and Studs have the high strength and accuracy essential to top Diesel performance. They are built for heavy duty service, with precise threads and surfaces highly finished to close tolerances. RITCO Connecting Rod Bolts and Nuts are made in any metal up to 2" diameter, exactly to your blueprint.

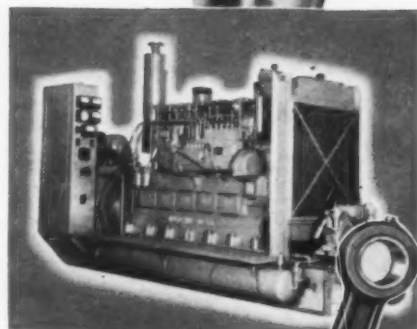
Remember RITCO For  
Special Bolts, Nuts and Studs • Alloy  
Steel Studs • Milled Body Bolts  
Drop Forging • Heat Treating

Let us quote on your specifications

**RHODE ISLAND TOOL COMPANY**  
148 WEST RIVER ST., P. O. BOX 1516  
PROVIDENCE 1, R. I.

Serving American Industry Since 1834

Typical of the high quality construction of this 8" x 10 1/2" Diesel engine by the Wolverine Motor Works, Bridgeport, Conn., are the RITCO Quality Bolts and Nuts used in its connecting rods.



## INGERSOLL the "BUY-WORD" in Shovels

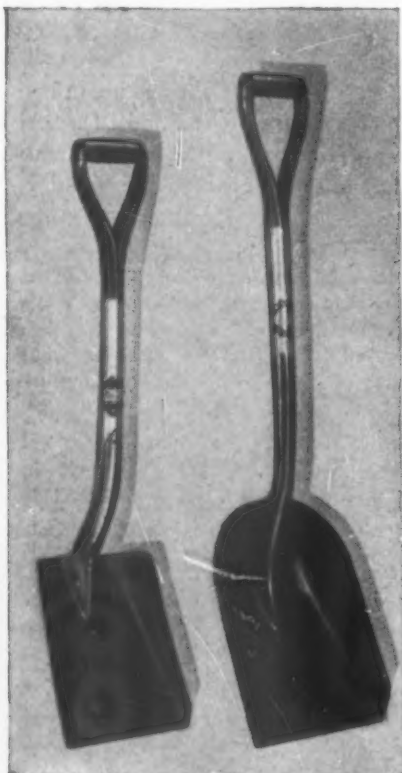
**No Split — No Curl — No Bend**  
End to end—no better shovels made! That's because every Ingersoll is made of Tem-Cross Tillage Steel — with blade edges **GUARANTEED NOT TO SPLIT**. Electrically heat-treated for springy ruggedness on toughest jobs. Smooth, polished hardwood handles. All of which is why Ingersoll is the "buy-word" with so many buyers. How about you?

### INGERSOLL STEEL DIVISION

Borg-Warner Corporation  
New Castle, Indiana  
Plants: New Castle, Ind.; Chicago, Ill.;  
Kalamazoo, Mich.

# INGERSOLL

*Shovels*



All blade finishes now black except Molders' Shovels and Grain Scoops, which may be furnished with either face or back polished.

**Hartford, Conn.**—The Hart Manufacturing Co. Frank W. Watts, who joined the company in February, has been appointed general sales manager.

**Chicago, Ill.**—Inland Steel Co. John J. Davis Jr. has joined the staff of the railroad division of the company. He will become manager of sales, railroad division, on January 1, 1948, when William J. Hammond retires from that position.

**Lynn, Mass.**—Champion Lamp Works. John W. Romig has been named assistant general manager, covering sales, engineering and manufacturing activities.



John W. Romig

He was formerly sales manager of the Technical Products division of Corning Glass Works. He is a graduate mechanical engineer, University of Illinois.

**Mid-West Territory**—Pantasote Corp. Raymond Neubecker has been named district sales representative. Mr. Neubecker has been with the company for many years in various technical capacities, including plastics and research.

**Phoenix, Ariz.**—Bemis Bro. Bag Co. A sales office has been opened at 630 Secu-



H. O. Parrent

rity Building. H. O. Parrent, with Bemis for over 20 years, is in charge.

**Louisville, Ky.**—Air Reduction Sales Co. H. C. Wallace has succeeded the late R. S. Moore as manager of the Louisville district, covering Kentucky, Tennessee and part of Indiana.

**Sioux City, Ia.**—Carboloy Co. Inc. The Sioux Machinery & Supply Co., 315 W. Seventh St., has been appointed an authorized distributor. The territory also includes northwestern Iowa, South Dakota, and northeastern Nebraska.

(Please turn to page 300)

**Now...**

**Finer because they're**

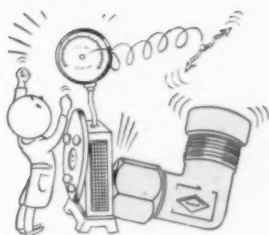


... for connecting copper, aluminum and other thin-wall metal tubing.

# Forged

## IMPERIAL TUBE FITTINGS\*

**EXTRA SAFETY  
ON HIGH  
PRESSURE WORK**



Brass forgings are over 80% stronger than brass castings. This exceptional strength makes forged fittings especially desirable for high pressure work ... and makes possible elimination of dead weight.

**TENSILE  
STRENGTH**

CASTING  
▲  
30,000  
POUNDS  
PER  
SQUARE  
INCH

FORGING  
▲  
55,000  
POUNDS  
PER  
SQUARE  
INCH

**STAND UP  
BETTER UNDER  
VIBRATION AND  
IMPACT**



The far higher elongation factor of forgings as compared to castings enables forged fittings to stand up better under hard knocks, mechanical shock and vibration. Fiber-like flow line structure of metal also provides assurance against fatigue failure.

**ELONGATION  
BEFORE  
BREAKING**

CASTING  
▲  
25%

FORGING  
▲  
40%

**POSITIVE  
PROTECTION  
AGAINST  
SEEPAGE**



Forgings have far denser grain structure than castings. Note microphotographs. That is why forged fittings assure against porosity, blow holes and concealed defects — prevent seepage of even hard-to-hold materials.

**MICROPHOTOGRAPHS**

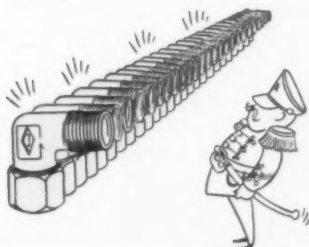


CAST BRASS



FORGED BRASS

**GREATER  
UNIFORMITY  
SPEEDS  
INSTALLATION**



Dimensions of forged fittings are held within extremely close limits. The resulting uniformity of size facilitates speedy, secure wrench grip — makes forged fittings easier to install. Sharp detail, uniform contour and smooth surface of forged fittings enhance the appearance of the equipment on which they are used.

**THE IMPERIAL BRASS MFG. COMPANY, 512 S. Racine Ave., Chicago 7, Illinois**

Write for Bulletin No. 349

\* Fittings have forged bodies on elbows and tees. Straight fittings made from brass rod.



# IMPERIAL

See Your Industrial Supply House

**PIONEERS IN TUBE FITTINGS AND TUBE WORKING TOOLS**





## "TAILOR MADE" for INDUSTRIAL USE

### GLOBE WOVEN BELTS

are made for a particular use.

The "measure" and "fit" are based on long years of experience in practical usage and constant research in belt engineering. Globe Woven Belts, like a fine suit, are long in wear and perfect in service. It will pay you to look at samples and inspect the record.

For instance, check the advantages of these favorites in the Globe line of quality.

- ★ **KANRY-TEX:** The superior belting for food processors.
- ★ **SOLID-WOVEN WHITE COTTON:**  
"Tops" for light conveyor purposes.
- ★ **ENDLESS WOVEN:** No slippage: no vibration . . . for high-speed use.
- ★ **CELLULOSE COATED:** For bakery and candy manufacturers.

Many other GLOBE beltings are available to meet the needs of industry. We invite your inquiry on the entire GLOBE line of Woven Belting. Write today for full particulars.



## GLOBE WOVEN BELTING CO.

1398 CLINTON STREET, BUFFALO 6, N. Y.

**Cincinnati, O.**—The Okonite Company. A new sales office has been established at 516 Building Industries Building, 626 Broadway. S. W. Pollock is in charge.

**Washington, D. C.**—Link Belt Co. A sales office has been reestablished at 1009 Washington Gas Light building, 11th & "H" Sts., with C. R. Heller in charge. Mr. Heller's duties will be confined to work with foreign purchasing commissions and with the governmental and armed service bureaus located in Washington.

**Boston, Mass.**—Westinghouse Lamp Division. Ira G. Deitrick has been named syndicate manager for the New England district, operating from district headquarters at 10 High St.

**Milwaukee, Wis.**—Grinnell Co., Inc., has acquired the B. Hoffmann Manufacturing Co., Milwaukee, Wisc. The new branch, located at 1819 West St. Paul Ave., will be known as the B. Hoffmann Manufac-



T. R. Horan

turing Co. division of Grinnell Co., Inc., and will serve southern Wisconsin, formerly handled by Grinnell Co. out of Chicago. T. R. Horan, associated with Grinnell since 1920, has been appointed branch manager.

**Charlotte, N. C.**—The Black & Decker Mfg. Co. A new service branch for Black & Decker and Van Dorn tools has been opened at 117 E. Ninth St. It will serve the Carolinas and eastern Tennessee.

**Akron, O.**—Goodyear Tire & Rubber Co. O. A. Schilling has been named eastern sales manager of the company's Mechanical Goods Division. He succeeds H. D. Foster, who was recently appointed manager.

**Detroit, Mich.**—The Elco Lubricant Corp. W. J. Allard has been appointed Detroit district manager, with headquarters in the Company offices in the Fisher Building.

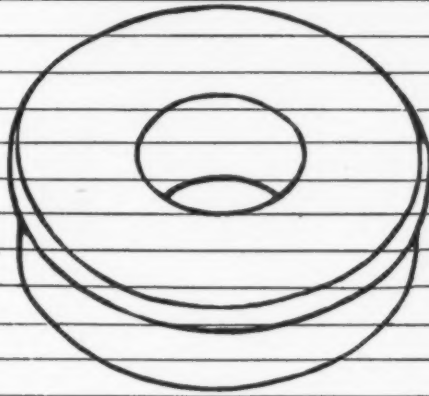
**Houston, Tex.**—Monsanto Chemical Co. A Texas sales office has been opened, to handle the company's products other than phosphates and plastics. Harvey M. Harker, at one time Director of Purchases for the company, is general branch manager.

**New York, N. Y.**—Illinois Testing Laboratories, Inc. J. A. Ariano, 136 Liberty St., succeeds Walton & Torrey as representative for the company.

(Please turn to page 302)

## Problems solved by Richardson...in Plastics

#1--Non-Corrosive, Abrasion Resisting, Conveyor Wheel.



**Problem:** To produce a conveyor wheel for a bottle vending machine which would be not only non-corrosive but resistant to the abrasive action of the conveyor chain moving around its periphery and still serve as its own self-lubricating bearing.

**Solution:** Laminated INSUROK graphitized fabric was recommended and approved for machining to size. After field tests had proved this material selection, quantity production was required and the economies of molding became evident. As Richardson facilities include both operations, INSUROK graphitized molding materials of desirable properties were produced and no lost time was expended in the change-over.

**INSUROK Precision Plastics**—INSUROK is the family name of a great variety of laminated and molded plastic products produced by Richardson. Laminated INSUROK is available in sheets, rods, tubes, punched and machined parts, made from paper, fabric, melamine, etc. Molded INSUROK products are made from Beetle, Bakelite, Plaskon, Tenite, Styron, Durez, Lucite, etc., by compression, injection and transfer molding.

## The RICHARDSON COMPANY

Sales Headquarters: MELROSE PARK, ILL.      FOUNDED 1858      LOCKLAND, CINCINNATI 15, OHIO  
 NEW YORK 6, 75 WEST STREET      Sales Offices      ROCHESTER 4, N. Y., 1031 SIBLEY TOWER BLDG.  
 PHILADELPHIA 40, PA., 3728 NO. BROAD STREET      MILWAUKEE 3, WIS., 743 NO. FOURTH STREET  
 CLEVELAND 13, OHIO, 326-7 PLYMOUTH BLDG. • DETROIT 2, MICH., 6-252 G. M. BLDG. • ST. LOUIS 12, MO., 5579 PERSHING AVENUE  
 Factories: MELROSE PARK, ILL. • NEW BRUNSWICK, N. J. • INDIANAPOLIS, IND.

RICHARDSON MEANS *Versatility* IN PLASTICS

Each **CJB** AHLBERG  
BALL BEARING  
is equipped with a  
**MATCHED SET**  
OF BALLS...

Accurate  
to  
25 Millionths  
OF AN INCH



The Balls in **CJB** Ahlberg Ball Bearings are hardened throughout—lapped and polished to mirror finish—accurate in sphericity to .000025". Each bearing contains a matched set of balls identical in size to .000025".

Whether the bearing is of deep groove construction for thrust capacity or the maximum ball type for extra radial capacity the balls are accurate to the "Nth" degree for smooth, quiet performance and long life. Without this extreme accuracy a bearing cannot be top quality.

Ahlberg Bearing Company, 3039 West 47th Street, Chicago 32, Illinois.

VISIT US AT



**Ahlberg** Bearings  
CHICAGO  
BALL BEARINGS • ROLLER BEARINGS • PILLOW BLOCK

**Portland Ore.**—Firestone Tire & Rubber Co. of California. Ralph A. Geyer was named manufacturers' sales representative for the Pacific Northwest area.

**Waterbury, Conn.**—Chase Brass & Copper Co. Leland S. Hanson, formerly manager of the New York city branch, has been promoted to sales manager, eastern division. Herbert H. Bartlett, manager of the Chicago branch, succeeds Mr. Hanson. G. Townsend Underhill succeeds Mr. Bartlett.

**Pittsburgh, Pa.**—Joseph T. Ryerson & Co., Inc. William G. Findlay has succeeded Howard L. Robinson as manager of the local plant. Mr. Robinson has been given a special assignment at the Cleveland plant. Mr. Findlay has been associated with the company for 25 years.

**Dearborn, Mich.**—Ford Motor Co. J. J. O'Neill has been appointed assistant manager of the fleet sales section.

#### INDUSTRIAL DEVELOPMENTS

The Carborundum Co., Niagara Falls, N. Y., has purchased the former assembly plant of Philco Corp. at 3345 West 47th St., Chicago, Ill., and will convert it to the Chicago sales office and warehouse of the company. Additions and alterations, expected to be completed by January 1, will increase the total floor space to 61,000 feet. The new warehouse will be under the direction of C. E. Hawke, domestic sales manager and W. C. McCargo, regional sales manager, with Gordon C. Watson in charge as district sales manager.

Westinghouse Electric Corp. has announced that electronics engineering and electronics sales activities for the Buffalo divisions will be handled by two newly formed sections. The changes are being made in connection with the transfer of of the Industrial Control Division from East Pittsburgh, Pa. to Buffalo, N. Y. E. H. Vedder has been appointed manager of the electronic control engineering section and R. W. Staggs manager of the electronic sales section. Mr. Staggs will also be responsible for sales activities of resistance welding control.

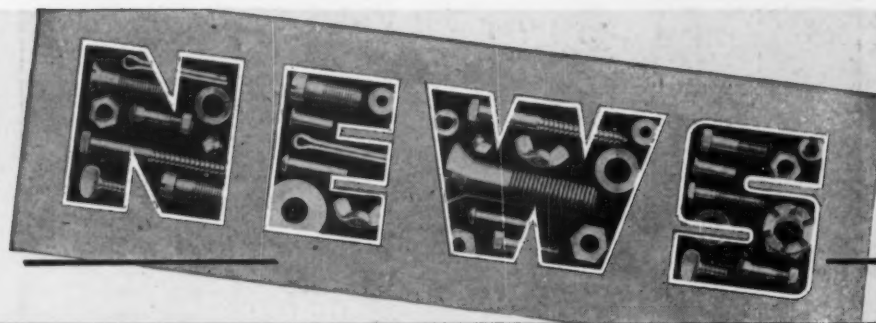
Air Reduction Sales Co., New York, N. Y., recently opened new oxygen manufacturing plants at Baton Rouge, La. and Decatur, Ill. The Louisiana plant will supply the south and central part of the state. The Illinois plant will serve that state and points formerly serviced by Air Reduction plants in St. Louis and Chicago.

General Electric Chemical Department, Pittsfield, Mass., has completed a new plant which will double the company's capacity to produce magnesium oxide.

(Please turn to page 304)

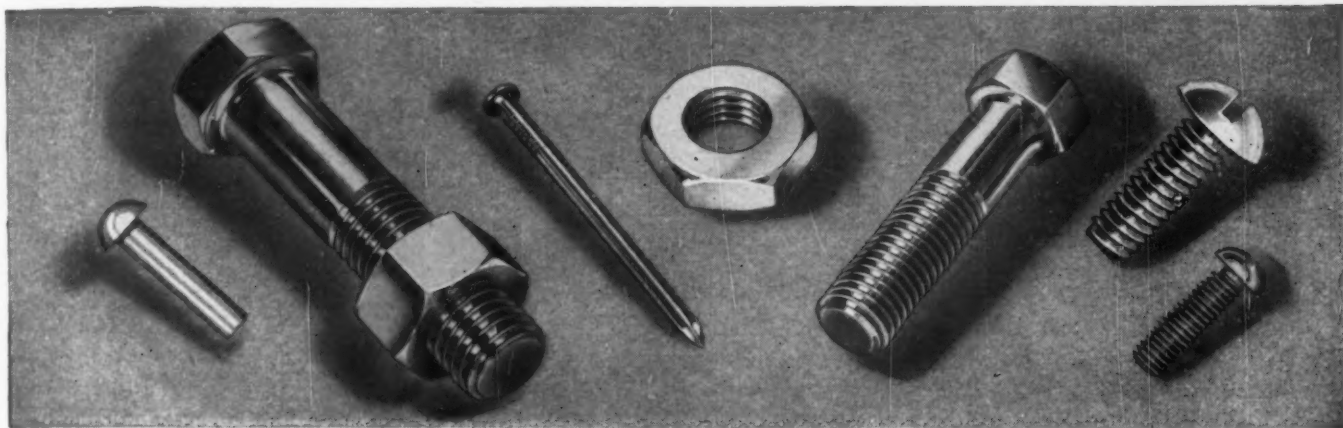


# HARPER fastening



## REDUCE CORROSION LOSSES

with Non-Ferrous and Stainless Steel Fastenings



### MONEL METAL BOLTS SIMPLIFY REPLACEMENTS

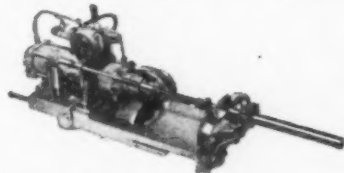
In butterfly valves ranging from small six inch diameters to huge 72 inch models for Utilities, Water Works and others requiring control of fluid systems, Harper Monel Metal bolts are used to fasten keeper segments which hold the rubber sealing seat in place. On occasion when the rubber needs replacement through wear the

non-corrosive bolts are easily removed and reused on the new seat. Salt Water flowing through the system will not corrode these fastenings. Time, maintenance expense and breakdowns are thus eliminated.



### FAVORITE DISH

Hamburger patties for the millions of American Hamburger fans are often handled and formed by machinery. A large manufacturer of such equipment specifies



Harper Stainless steel bolts, nuts and screws for strength, rust resistance and resistance to strong cleaning solutions.

### 5,200 Items In Stock

Bolts, nuts, screws, washers, rivets, nails and many other fastenings made from Brass, Bronzes, Monel Metal and Stainless Steels are available in reasonable quantity and in most items direct from stock—the largest anywhere. For all requirements where corrosion is a factor Harper non-ferrous and stainless steel fastenings save breakdowns and maintenance costs. Inquire today.



Chain Operated Rubber  
Seat Butterfly Valve

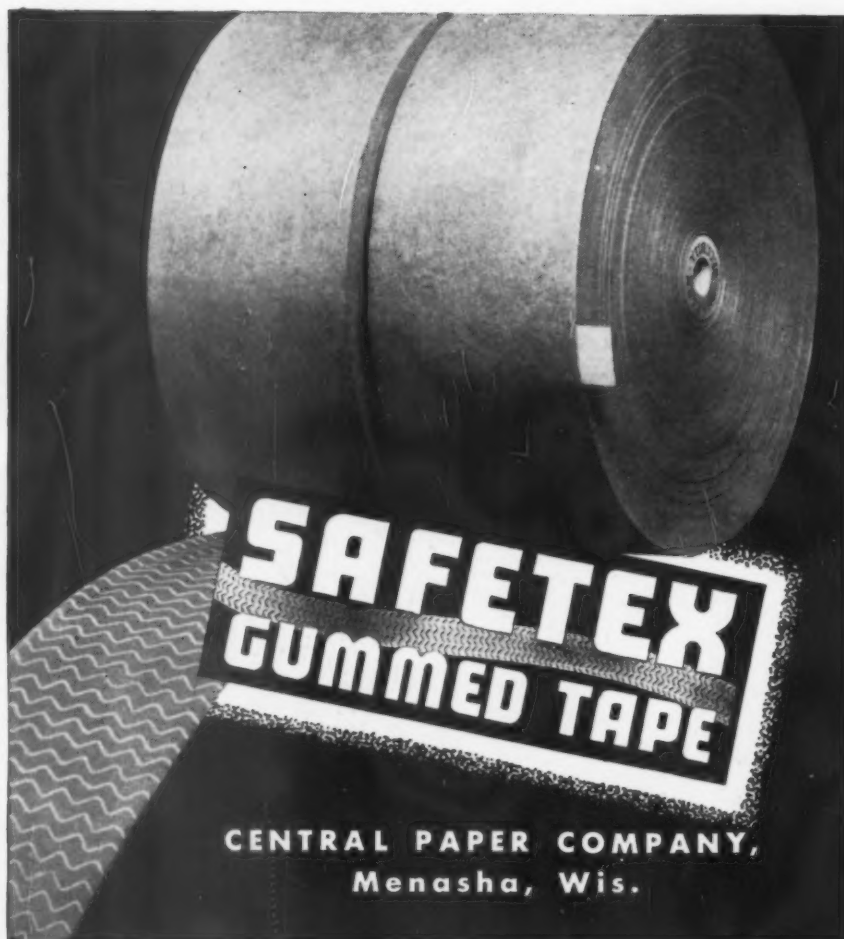
### The H. M. HARPER COMPANY

2606 FLETCHER STREET.  
CHICAGO 18, ILLINOIS

Branch Offices—New York City, Philadelphia, Los Angeles, Milwaukee, Cincinnati, Dallas, Cleveland

**HARPER**  
*Chicago*

HARPER SPECIALIZES IN EVERLASTING FASTENINGS



**SAFETEX**  
**GUMMED TAPE**

**CENTRAL PAPER COMPANY,**  
**Menasha, Wis.**

## **HALLOWELL** Shop Equipment of Steel

Designed for **UTILITY...** Built for **LONG LIFE**



Fig. 732  
Pat'd and Pats. Pending,  
Drawer is extra.

These "Hallowell" Ready-made Work Benches of Steel with their hard, smooth and splinter-proof tops are an asset to any shop. Exceptionally sturdy and strong, they are designed to stand firm and rigid without costly bolting to the floor . . . and to withstand constant use and abuse. More than 1300 combinations . . . interchangeable sections . . . five heights and widths and seven standard lengths. They can be easily moved and joined end-to-end to form a continuous work bench of any length. For detailed information—write for your "Hallowell" Catalog and pick out the "Hallowell" you want. Deliveries are surprisingly prompt.

"Unbrako" and "Hallowell" Products are sold entirely through Industrial Distributors.

OVER 44 YEARS IN BUSINESS

**STANDARD PRESSED STEEL CO.**

JENKINTOWN, PENNA. BOX 590 • BRANCHES: BOSTON • CHICAGO • DETROIT • INDIANAPOLIS • ST. LOUIS • SAN FRANCISCO

**Cleveland, O.**—Precision Welder and Machine Co. John W. Diebold has been named northern Ohio representative, with offices at 1921 East 55th St.

**Chicago, Ill.**—C. J. Tagliabue Mfg. Co., subsidiary of Portable Products Corp. The Chicago district sales offices have been moved to 1120 Merchandise Mart.

**Hanson-Van Winkle-Munning Co.** is erecting a new research laboratory and test plant on its property in Matawan, N. J. Included in the building will be equipment and facilities for research and experi-



Sketch of Hanson-Van Winkle-Munning Co. Plant

mentation in plating processes of all kinds, a laboratory for the preparation of special solutions, an enamel and coatings laboratory, a buffing and polishing section and a corrosion testing laboratory.

**Rudel, Carey & Briggs Inc.**, 435 Fourth Ave., New York 16, N. Y., was formed as of June 1 by consolidation of the organizations and interests of Rudel-Carey, Inc., and Walter D. Briggs, Inc. Both these companies had been operating in the fields of high speed and carbide cutting tools, abrasives and machine tool accessories in the metropolitan area, primarily as exclusive manufacturers' representatives on a distributor basis.

**The Carborundum Co.** recently broke ground at Niagara Falls, N. Y., for the first major building in its extensive building program, which will eventually involve an expenditure of over fifteen millions of dollars. To be known as the Maintenance Building, the new structure will cost over a million and a quarter dollars, including equipment, and will provide 120,000 square feet of operating space. It is expected that the building will be ready for occupancy about January 1.

**The Reynolds & Reynolds Co.**, Dayton, O., will shortly begin construction of a new plant at Celina, O. Plans call for a new one story plant providing 35,000 square feet and costing approximately \$250,000.

**Norma-Hoffman Bearings Corp.**, Stamford, Conn. has announced the election of F. W. Mesinger, vice-president, to the board of directors. He has been with the corporation 28 years and is in charge of sales.

**Specialty Battery Co.**, a subsidiary of the Ray-O-Vac Co., Madison, Wis., has been formed to make special dry batteries of any type, the use of which is insufficient to warrant mass production methods.



**WE'RE PROUD OF**  
*this* **LONG COUNT!**



Remember the famous "long count" that made boxing history in 1926? You'll be interested in some of General Industries' plastics molding "long counts", too. They're typical of the way we've been providing, for more than a quarter century, the best in molded plastics to help manufacturers satisfy *their* customers.

For instance, the White Sewing Machine Company of Cleveland, Ohio, first ordered this connector plug from us in 1928. We're still

molding connector plugs for White today! That's a "long count" for plastics molding! And an example of the type of dependability that has helped the White Company establish a "long count" for quality, too.

Solve *your* molded plastics problem, too, at lowest possible cost, by calling on General Industries' reliability for long-term satisfaction. Our representative is near you . . . and ready to answer your questions.

DETROIT: Phone Madison 2146  
 BUFFALO: Phone Grant 8567

**THE GENERAL INDUSTRIES CO.**  
**MOLDED PLASTICS PIONEERS**

Department PR • Elyria, Ohio

MARION, IND.: Phone 2566-W  
 CAMDEN: Phone 2215



**Bond**  
REG. U.S. PAT. OFF.  
**TRUCK  
CASTERS**

**COSTS ARE LOW  
WHEREVER THEY GO**



Every Bond caster is designed to do a specific industrial job with the utmost efficiency and at the lowest cost. Ask us to help you select the Bond caster that's exactly right for your needs.

**Bond** casters save you money many ways—  
they are short cuts to speedy handling. **Bond**

vulcanized-on rubber tread wheels save your

floors. Easy-swiveling, husky, trouble-free, each

**Bond** caster assures smooth materials flow

during a long, service life. There's a type and size

for every industrial requirement. You'll find the caster

that is designed specially for yours in **Bond**

catalog K-36. Write for it today.

**BOND FOUNDRY & MACHINE CO.  
MANHEIM, PA.**

## Packaging Supply Field

(Continued from page 97)

(125,000 tons), export (400,000 tons), and miscellaneous (100,000 tons)—a total of 875,000 tons, leaving available only 2,932,000 tons of metal for the can manufacturers. This means a shortage of 525,000 tons for the year.

Because these figures take into consideration new steel production facilities which will not reach production stage until late in the year, the shortage of the first and second quarters will be even greater than as indicated above. Work stoppages, of course, have not been considered.

The steel companies have announced that their contemplated new facilities are not coming along as fast as they had anticipated and while probably more cans will be shipped by the can manufacturers than in any other year, the total will probably represent about 80% to 85% of the demand.

### Steel Drums

The steel barrel industry has not been able to meet the demand due to the acute shortage of steel sheets. It is estimated that this shortage of steel sheets will last for the balance of 1947. The first quarter of 1948 may improve this condition. This is the first time in six years that this industry has had to curtail its production because of a shortage of steel sheets.

The general opinion of this industry is that they will operate at near capacity for the next three to five years.

### Glass Containers

Glass container production hit a record high of 11,200,000 gross in January of this year as reported by the Bureau of the Census, Department of Commerce.

There has been some decrease in demand, but even with this decrease, the demand is still greater than most of the glass container manufacturers can produce. This situation should remain about the same throughout 1947.

The Glass Industry could produce more containers today if a sufficient amount of Soda Ash were available. It is possible that this shortage may be more severe than in 1946 according to the Commissioner of Civilian Production. Most of the glass container manufacturers will receive, during 1947, new machines they cannot operate because of the shortage of Soda

(Please turn to page 308)



A nation-wide survey was conducted recently to discover the main factor which causes consumers to identify any given product. More than 50% of the consumers named the package as the determining influence in this identification. The advertisement, the trademark and the company signature trailed the package in this respect. Of the packages identified, nearly 80% were set-up boxes. Cereal packages, naturally, were the biggest single exception. Here is the nation's prize salesman — the set-up box — an important addition to your sales force.



## **NATIONAL PAPER BOX MANUFACTURERS** *Association* **AND COOPERATING SUPPLIERS**

Liberty Trust Building • Philadelphia 7, Penn

FOR INFORMATION OR SERVICE • CONSULT YOUR NEAREST SET-UP BOX MANUFACTURER

# "FLOATING TENSION"



## Will Reduce Your Hack Sawing Costs

Not very long ago hack saw machine operators "pinged" their blades with a wrench just to the right tune according to their trained ears, and felt that they were "regulating" tension. Yet blades wore out quickly, broke, or cut out-of-line.

The torque wrench and other tension-indicating gadgets were steps in the right direction, and gave some indication of correct tensions. But they do not *maintain* the proper tension.

### ***There is a solution to the problem of applying and maintaining blade tension during the actual cutting operation.***

The Millers Falls Tensiometer, a small cylinder enclosing a strong spring that can be set at a tension of from 0 to 4000 pounds, offers "floating tension," maintained at all times during cutting operations. This "floating tension" *gives and takes* the differences in stresses and strains placed upon the blade. When the blade expands the Tensiometer takes up the slack; when the blade contracts it gives enough to ease the shock. Because tension is truly regulated and maintained, breakage and wear

are held to a minimum, accuracy and speed are increased greatly.

Let your Millers Falls distributor give you a demonstration of "floating tension" right on your own machines, at no obligation. Let him tell you about Millers Falls Blu-Mol High Speed Double Life Blades that give the lowest cost per cut of any blade ever produced. Write today for the name and address of *your* Millers Falls distributor.



**One thing in common — QUALITY!**  
**MILLERS FALLS COMPANY**  
**GREENFIELD, MASSACHUSETTS**

### Packaging Supply Field

(Continued from page 306)

Ash. Late in 1947 and early 1948 additional Soda Ash capacity may come into production. If so, the glass manufacturers should be in a position to supply the increased demands predicted.

Even though the Standardization Order L-103 has been rescinded, many of the glass companies are furnishing the same kind of containers as when the order was in effect.

Standardization and today's cost advantages are very attractive to a good many industries using glass containers. It affords lower costs, not only in purchase price, but in operation through high speed equipment. It also enables them to take advantage of full production and quicker delivery by the glass container manufacturer.

It is difficult to say when Private Molds will again be widely used. Because the industry has reached a figure of nearly 120,000,000 gross per year, compared to about half of that figure before the war, the replacement mold building schedule is almost more than the mold-makers can handle. Most glass companies are not in a position to take on new Private Mold business. In order to get molds made, they might have to shut down machines which are now operating, for lack of replacement molds. Steps are being taken to increase mold productivity and certainly by some time in 1948 and perhaps during 1947 new Private Molds may begin to appear in quantity. Some new Private Molds are appearing today. In many cases this is because it is necessary to replace old molds that have been worn out and replacements are made with new shape molds.

### Cellophane

The requirements of Cellophane for new as well as present uses continues to indicate increases in the demand for this packaging film which is above the present capacity of the cellophane manufacturers.

There were no increases in the manufacturing facilities of Cellophane during the War years. The DuPont Company, and the Sylvania Company, are building new plants which may be in production the latter part of this year.

The shortages of chemicals, such as glycerin, caustic soda, and some plasticizers used for MP grades, have been very acute. It is hoped

(Please turn to page 310)



# PIONEERS TODAY

## *as in the yesterdays*

More than a century ago Powell started pioneering in the field of industrial valves.

The first bronze regrinding globe valve was a Powell "first".

And, twenty-five years ago, with the establishment of the Special Design and Alloy Valve Division, Powell Pioneers were the first to set forth on the trail to a line of corrosion-resistant valves for the chemical and process industries.

Today the complete Powell Line includes Bronze and Iron Valves of every required type, design, size and pressure; Cast Steel Valves of every type, in pressure classes from 150 to 2500 pounds; and, for the chemical and process industries, a complete line of Corrosion-Resistant Valves in many special designs and the widest range of pure metals and alloys ever used in making valves.

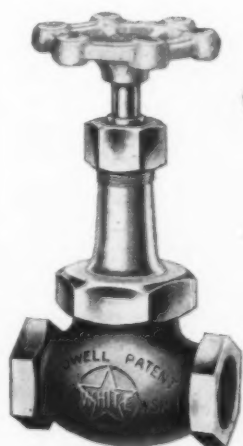
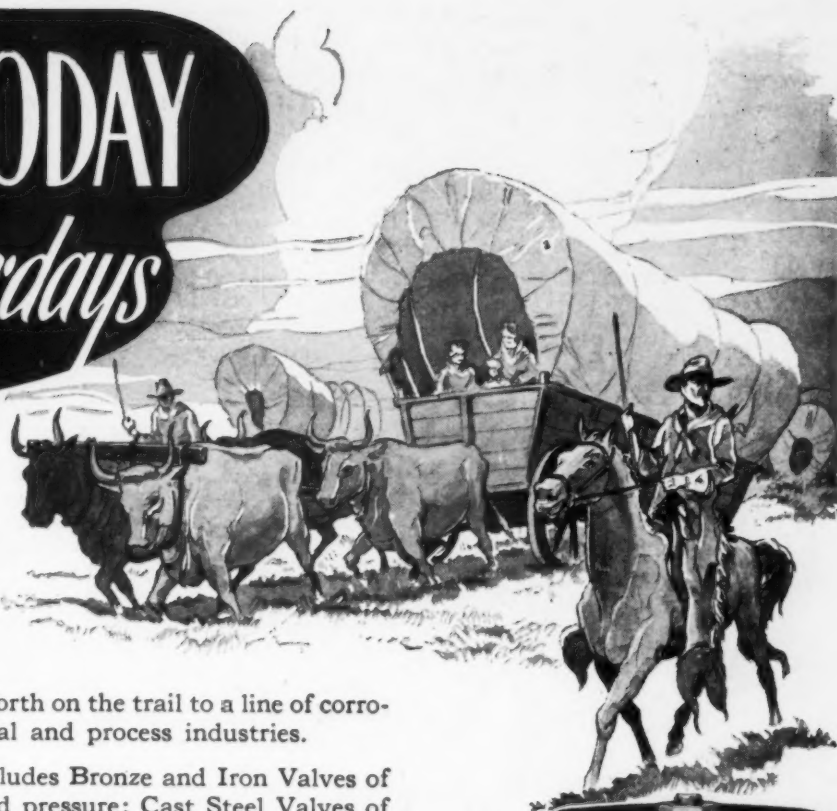


Fig. 1708 — 200-pound Bronze Globe Valve with screwed ends, union bonnet, renewable, specially heat treated stainless steel seat and regrindable, renewable, wear-resisting "Powellium" nickel-bronze disc.

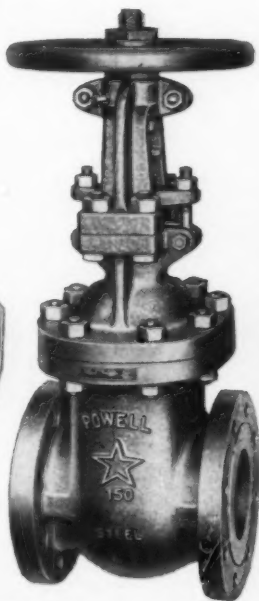


Fig. 1503 — Class 150-pound Cast Steel Gate Valve. Has flanged ends, outside screw rising stem, bolted flanged yoke and taper wedge solid disc.



Fig. 241 — Large 125-pound Iron Body Bronze Mounted Globe Valve. Made in sizes 2" to 16", incl. Has outside screw rising stem, bolted flanged yoke and regrindable, renewable bronze seat and disc. Also available in All Iron.



Fig. 375 — 200-pound Bronze Gate Valve. Screwed ends, inside screw rising stem, union bonnet and renewable, wear-resisting "Powellium" nickel-bronze disc.

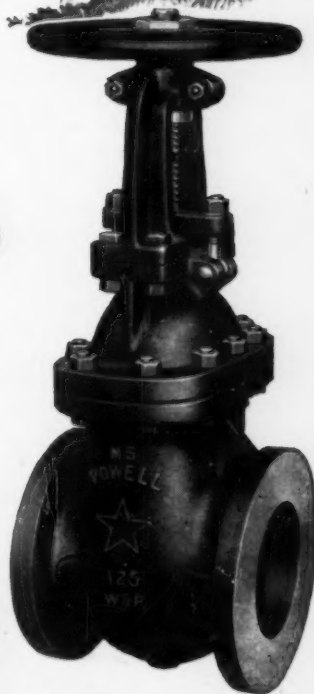


Fig. 1793 — Large 125-pound Iron Body Bronze Mounted Gate Valve. Made in sizes 2" to 30", incl. Has outside screw rising stem, bolted flanged yoke and taper wedge solid disc. Taper wedge double disc can be provided in sizes 2" to 12", incl.

**The Wm. Powell Co., Cincinnati 22, Ohio**

DISTRIBUTORS AND STOCKS IN ALL PRINCIPAL CITIES

# POWELL VALVES

**"SOLVOL**  
increased carbide  
drill life more  
than 150%..."



...says  
J. P. TOMLINSON  
D. A. Stuart  
Oil Co.  
Representative

**this is the story...**

"Using a competitive soluble oil, this manufacturer was getting from twenty to twenty-five holes per carbide drill, being used on angular crankshaft oil holes. The drills in many cases were seizing and flaking as they became dull. Production rate was very slow and cost per crankshaft much higher than they had anticipated. SOLVOL LIQUID CUTTING COMPOUND was put on the job at a twenty to one dilution. Drill life immediately increased to sixty-five holes per drill. Flaking was eliminated entirely. The production rate accordingly increased with reduction of crankshaft machining costs."

*J. P. Tomlinson*

This actual performance report from Stuart's files provides additional proof that the *right* cutting fluid can make the difference between profit and loss on many metal-cutting operations. Put an experienced Stuart engineer to work on *your* cutting problems... his service, supported by complete specialized laboratory facilities, is available for the asking.

STUART service goes  
with every barrel  
WRITE FOR DETAILS

**D. A. Stuart Oil Co.**  
EST. 1865 LIMITED

2727-31 SOUTH TROY STREET, CHICAGO 23, ILL.

### Packaging Supply Field

(Continued from page 308)

that the availability of these chemicals will improve during the year.

#### Cellulose Acetate

The production facilities for this film were also not increased during the War years. However, during the past year there was a small increase. There are some plans under way to increase the production of Cellulose Acetate, but no increase will be available before next year.

#### Pliofilm

The production of this film practically stopped during the War. The Goodyear Tire and Rubber Company, which manufactures this film, is gradually getting back into production and soon should reach pre-war peak.

#### Aluminum Foil

Production facilities for the manufacture of foil for packaging purposes seem to be adequate. The rolling capacity is being increased by several suppliers and some equipment is already in production.

#### Bag Industry (Cellulose Products)

There are six cellulose products used chiefly in the manufacturing of bags. With one exception, they are all very tight as to supply, which makes the bag supply very critical:

**Bleached Kraft.** There has never been as great a shortage of this material as there is today. There are two new bleaching plants now being constructed which might be in operation this fall, but they will have very little effect on the bleached Kraft market for bags. This situation may be critical for at least two years.

**Natural Kraft.** There is no new development under way to increase the supply of natural kraft, either northern or southern, which can possibly affect the bag picture for the next two years. There may be some diversion of natural kraft to bag purposes in some instances where a mill will upgrade and make stronger bag stock rather than wrapping paper stock. Some of the large container bag people are in desperate straits. One of these large container bag companies has bought two natural kraft mills and will be in a good supply position. The general picture, however, is very poor and with the possibility of no more than four to five thousand tons, perhaps, being diverted for the general bag use.

(Please turn to page 312)

## MAGNOLIA BEARING METALS

### Bearings Squeeze Out?

Repour with a MAGNOLIA babbitt. Tin-base POWER: extreme loads, Lead-base PYRAMID: pressures and temperature less critical.

Both provide upper-register hardness, strength and high softening temperature.

Your MAGNOLIA BEARING METAL BULLETIN shows typical uses.



Look for the  
Flower Trade Mark

### MAGNOLIA METAL CO.

14 West Jersey Street Elizabeth 4, N. J.  
Warehouses in Ft. Worth, Chicago,  
San Francisco and Montreal

**FAST  
DELIVERY**

ON

**RUBBER GASKETS,  
STRIPS, SHEETS**

—2 to 3 days—

...

**RUBBER  
EXTRUSIONS**

—3 weeks—

...

**RUBBER  
MOULDINGS**

—4 weeks—

Quotations or Samples  
Furnished Promptly



**MECHANICAL  
RUBBER  
PRODUCTS COMPANY**

737 E. 150th Street, New York 95, N. Y.

save assembly time . . .  
avoid breakage losses

use extra strong . . .

accurately formed

**CLEVELAND  
HIGH-CARBON HEAT-TREATED  
CAP SCREWS**

*made by*

**DOUBLE  
EXTRUSION**

**Y**our experience with threaded fasteners tells you better than we can how well worth while it is to use Top Quality cap screws. The extra toughness and dependability of Cleveland High Carbon Heat Treated Cap Screws give you full assurance of a wise selection. You get the best that money can buy at only slightly higher cost than 1020 bright screws. Complete range of sizes from  $\frac{1}{4}$ " to  $1\frac{1}{2}$ " diameter. All Cleveland products are made by the Kaufman Process—the modern cold forging method that assures you stronger threaded fasteners than any other known process.

ASK YOUR JOBBER FOR CLEVELAND FASTENERS

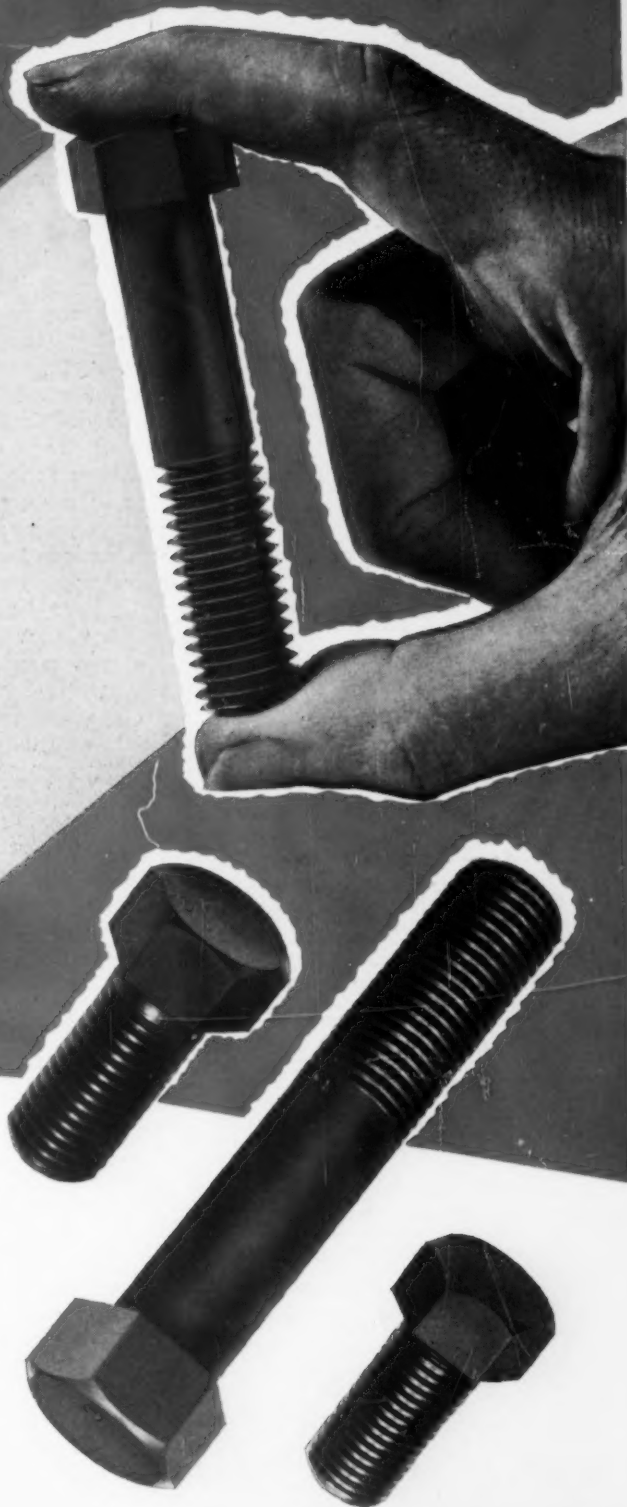
*The Cleveland Cap Screw Company*

2917 EAST 79TH STREET • CLEVELAND 4, OHIO

Warehouses: Chicago and Philadelphia

**CLEVELAND**  
*Top Quality*  
**FASTENERS**

MADE BY THE ORIGINATORS OF THE KAUFMAN PROCESS FOR GREATER STRENGTH AND ACCURACY

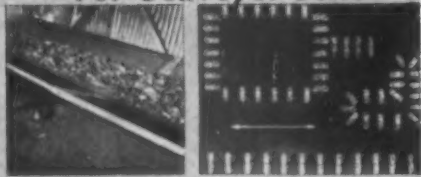




## Present Day Practice in Belt Fastening

Every man who has anything to do with the purchase, application or maintenance of conveyor, transmission or V-belts will find the bulletins listed below of considerable value in connection with belt fastening work. A knowledge of present day practice in belt fastening helps reduce the loss in machine hours due to belt failures caused by the use of the wrong type of fastener or improper application. We shall be glad to send any or all of them to you or to any of the men in your organization.

### For Conveyor Belts



**FLEXCO HD Belt Fasteners** are used to make a "water-tight" butt joint in conveyor belts ranging from  $\frac{1}{4}$ " to  $1\frac{1}{2}$ " thick and of any width. The view on the right shows the various types of rips that can be repaired with these fasteners and Flexco HD Rip Plates.

Bulletin F-100 gives complete details on how to fasten and repair conveyor belts.

### For V-Belts



**ALLIGATOR V-Belt Fasteners** are now being widely used to fasten B, C and D, open-end V-belt of cross woven fabric core construction now being made by most belting manufacturers. The view at the left shows a typical application of these fasteners to a drive where endless V-belts would require dismantling the machinery to put the belts on the sheaves.

Bulletin V-205 gives complete instructions on how to use V-belt fasteners.

**FLEX V** Fasteners for A and B belts are also available for lighter duty V-belt drives. Ask for Bulletin V-14.

### For Transmission Belts



"JUST A HAMMER TO APPLY IT"

**ALLIGATOR Steel Belt Lacing** is in world-wide use to make smooth, flexible joints in leather, rubber, balata, stitched canvas or solid woven belts up to  $\frac{3}{8}$ " thick and as wide as they come.

Bulletin A-60 tells how to fasten and repair transmission belts.

Sold by Supply Houses Everywhere

**FLEXIBLE STEEL LACING COMPANY**  
4697 Lexington Street, Chicago 44, Ill.

## Packaging Supply Field

(Continued from page 310)

**Glassine.** At present glassine—laminated, plain, lacquered or waxed—is also in tight supply. It is expected that in late 1948 or early 1949 there will be three or four new glassine machines in operation. This would raise the possible production tonnage of glassine from 105,000 tons to 135,000 tons for 1949, and in 1948 a possible increase of 10,000 tons. This does not improve the bag picture very much. There are so many new uses and demands for greaseproof papers that these, together with the normal demand, will keep glassine badly over-sold.

**Sulphite—waxed and plain.** There has been little new sulphite production in the country in the last few years. A large part of the possible production has been switched to printing paper purposes. Some mills have been taken over by the magazine and publishing industry. No new production is planned on bag type sulphites.

**Cellophane.** Sylvania and Dupont are now supplying about 60% to 70% of the demand for Cellophane. These two concerns are still somewhat at the mercy of the pulp market but there is a possibility of some relief toward the end of 1948.

**Foils.** Foil has increased in use in the bag industry considerably in the past year, but the surface has only been touched due to the shortages of proper machinery for conversion into flexible package form. Narrow widths are all that are available at the present time, which makes the conversion costly. But new production in wider widths is expected some time this year. Even with the wider widths, there will be little increased production available for the bag industry.

The economic pictures in some of these fields could quickly change by the reduction of the demands. It is important that the purchasing, sales, and production departments work very closely on studying their requirements to avoid heavy inventories at the prevailing high prices.

1 1 1

## VITREOUS CHINA PLUMBING FIXTURES STANDARD

Revised Commercial Standard, CS20-47, Staple Vitreous China Plumbing Fixtures, is announced by the Division of Trade Standards, National Bureau of Standards, Washington, D. C. It became effective for new production as of July 12, 1947.

Are you  
BUYING ROPE  
for  
RAILROADS



**W**hen buying rope for general railroad use, specify Whitlock Waterflex Manila. Here is a durable, dependable, water-proofed, long-life rope—rope that will stand up under 24-hour service and under all weather conditions.

Whitlock rope products are carried by leading supply houses from coast to coast.

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WHEN THE STATUE  
OF LIBERTY WAS  
UNVEILED IN  
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WAS MAKING INDIVIDUALIZED  
CHEMICAL EQUIPMENT



PLANTS:  
Jersey City, N. J.    Dover, N. J.

**L.O. KOVEN & BRO. INC.**  
154 OGDEN AVE. • JERSEY CITY 7, N. J.

66 years of know-how in the designing and manufacturing of chemical equipment assures you of time-tested craftsmanship. Only equipment individualized for specific jobs can be relied upon for economical, efficient performance. Have you a production problem caused by inadequate or obsolete equipment? A KOVEN representative will discuss it with you without obligation. Call or write KOVEN now.

KOVEN equipment in all commercial metals and alloys includes: pressure vessels, extractors, mixers, stills, condensers, kettles, tanks, chutes, containers, stacks, coils.

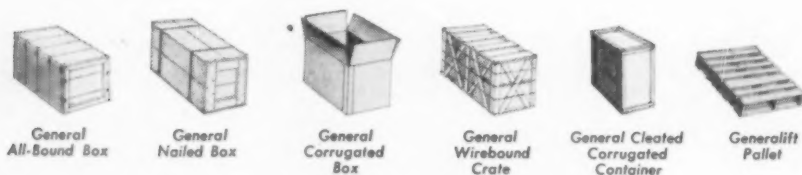
**KOVEN FOR INDIVIDUALIZED CHEMICAL EQUIPMENT SINCE 1881**



...by these **GOOD** names  
you shall know us

These and hundreds of other users of shipping containers are numbered among our customers. Whatever the product may be—from pianos to precision parts—our 25 years' experience enables us to design containers that assure better protection, reduce shipping weight, and provide for increased production. Write today. We'll be glad to help you solve your packing problems. There's no obligation, of course.

Send for your copy of "The General Box." It's free—it's packed with facts of interest to you.



#### ENGINEERED SHIPPING CONTAINERS



**IMPORTANT NOTICE:**  
New plants and expanded production facilities are now in full operation. Your inquiry or order will receive prompt attention.

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GENERAL OFFICES: 48 W. Illinois St., Chicago 10, Ill.

DISTRICT OFFICES AND PLANTS: Brooklyn, Cincinnati, Detroit, East St. Louis, Kansas City, Louisville, Milwaukee, New Orleans, Sheboygan, Winchendon, Natchez.

Continental Box Company, Inc.: Houston, Dallas.

#### Lined Steel Containers

(Continued from page 119)

"oil colored" linings have similar values for the shipment of lubricants in open ended drums.

Lined containers of the types within which the linings may be seen while the contents are being removed, gain in sales value because they look so much like the linings applied to food cans and other high grade canned products. To retailers and others the linings convey the impression that the packager and shipper are taking care.

To men who are more technically informed, the linings may have the sales value of "insurance". Some products if even slightly contaminated can become highly corrosive. Some of the turpentines, for example, if they pick up water vapor before their containers are fully sealed, are said to develop slowly but powerfully in corrosiveness. The container lining can protect the package itself as well as the packaged material against this corrosiveness. Therefore the technical man likes to see that lining within the container, even though in a given instance the container contents may rarely need it.

1 1 1

#### Evaluating Efficiency of the Purchasing Department

(Continued from page 137)

items appearing among the calculable considerations of the evaluation of the purchasing function. They may well explain costs appearing too high, unusual expenditures, inventory conditions, and general purchasing problems.

#### III. Derived Conclusions

Every firm and every purchasing department should have a set of rules. There should be a written policy—a definite method adopted and followed by the firm. The purchasing department should also be under the guidance of a record of procedures which sets forth the mechanics by which the policy is carried out. The policy and procedures are the standards for the operation of the firm. Sound standards are essential to real progress.

Through a careful analysis of both tangible results and intangible factors concerning the purchasing function, the director of purchases should be able to recognize and point out the effectiveness and value of current purchasing policies and

(Please turn to page 316)





*Fast-cutting*

**SIMONDS**  
ABRASIVE CO.

**RESINOID BONDED  
GRINDING WHEELS**

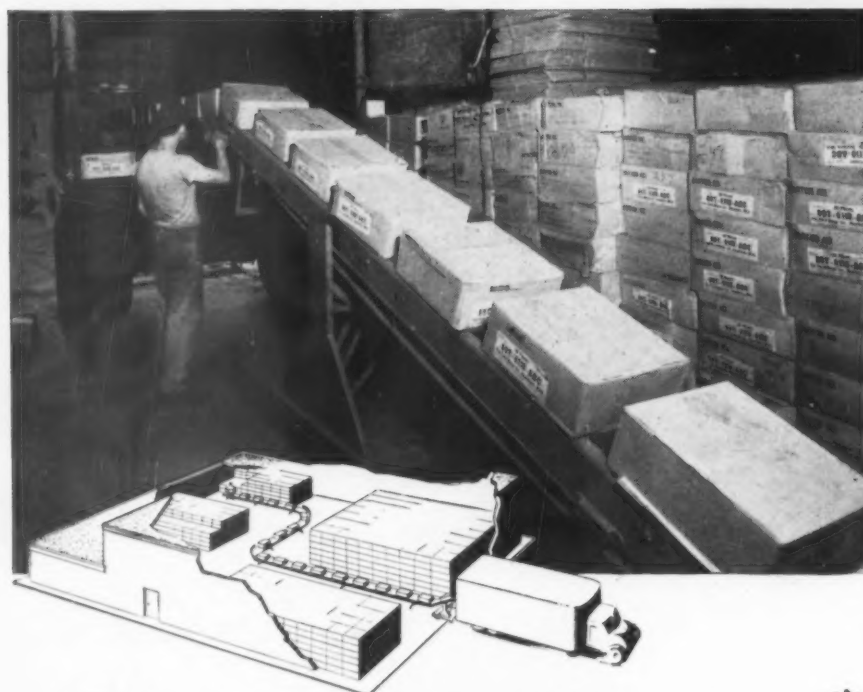
More grinding . . . done faster! That's the story of Simonds Abrasive high speed resinoid bonded grinding wheels . . . especially efficient for rough snagging work in foundries and steel mills where fast stock removal at reasonable cost is the prime consideration.

Also used for high speed abrasive cutting-off operations and many precision finishing jobs such as roll grinding, saw gumming, disc grinding and surfacing with segments.

Send for our Grinding Wheel Data Book for complete information and specify **SIMONDS ABRASIVE** to your nearest Simonds Abrasive Distributor.



**SIMONDS ABRASIVE COMPANY • TACONY AND FRALEY STREETS • PHILADELPHIA 37, PA.**



**2 MEN load 9 TONS per hour\***

\* IN ONE YEAR THIS EQUALS  
**43,200,000 Pounds or 2 Heavy Cruisers**

#### THE PROBLEM

Baker Cartage Company of Detroit hauls cartons of pistons for the Ford Motor Company. Cartons weigh approximately 50 pounds each and are stored in a large warehouse that does not have a loading dock. Cartons must be moved as much as 200 feet and then lifted into a truck.

#### SOLVED BY RAPIDS-STANDARD

Rapids-Standard engineers suggested Rapid-Wheel Gravity Conveyors with Q-Stands for carrying the cartons through the warehouse and a Rapid Power Booster for lifting them into the truck. The installation has been an outstanding success. Two men, one feeding the conveyor and one stacking inside the truck, handle an 800 carton load weighing 21 tons in 2½ hours. The complete operation can be handled by the driver and his helper.

The same set-up is used for unloading trucks. The direction of the Power Booster and the slope of the gravity conveyor are simply reversed.

The installation can also be operated with just one man. The conveyor is set up in the usual way and the man feeds the gravity conveyor until it is loaded with cartons for its full length. Then he climbs into the trucks, turns on the Rapid Power Booster and cartons are fed to him until the line is empty.

*Rapids-Standard Portable Conveyors have a time and money saving place in the handling of cartons, bags, cases, bales, cans or packages. Write today for full information on how they will save for you.*



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**The Rapids-Standard Co., Inc.**

Sales Division—379 Peoples National Bank Bldg., Grand Rapids 2, Michigan

#### Evaluating Efficiency of the Purchasing Department

(Continued from page 314)

procedures. Here he is given the opportunity to note his conclusions regarding existing policies and procedures along with the evidence supporting these conclusions.

#### IV. Recommendations

Policies and procedures should be capable of change to meet new conditions as they arise. With this in mind, recommendations are now set down showing the most efficient approach to current purchasing problems. A compilation of the report at regular intervals will enable the director of purchases to revise this approach so it will best meet the everchanging conditions effecting the purchasing function.

It is apparent that with accounting methods alone it is possible to no more than indicate the efficiency of the purchasing function. An analysis of the factors influencing the data is therefore necessary. From this analysis comes the evaluation of the efficiency of the purchasing function. With this analysis the director of purchases can present recommendations to management which will lead to the strengthening and consolidation of purchasing methods.

1 1 1

#### Research and Purchasing

(Continued from page 99)

to purchased items. Notices of failure to deliver or delayed shipments need not necessarily be brought to the attention of the research department if the requirements are fully understood. The purchasing department, if properly integrated in the overall program with respect to function, is fully authorized to proceed with procurement providing specifications are met. It seems like a waste of time (which often happens) to ask "What now?" when a delivery failure is encountered. Only when sources of supply have been exhausted should a change in specifications be asked for since around this change there may hinge much effort and considerable chance for success.

The purchasing department is in best position to participate and assist in research when its personnel has a reasonable understanding of its nature. It is a fallacy that seems to get around in certain quarters

(Please turn to page 318)

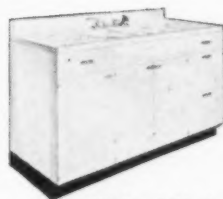
YOU FURNISH THE STEEL  
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Benches

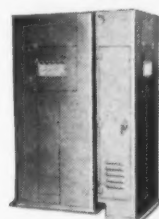


Filing Cabinets

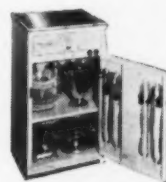


Gravity Conveyors

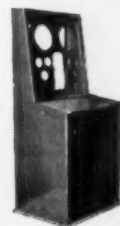
### STANDARD LYON PRODUCTS



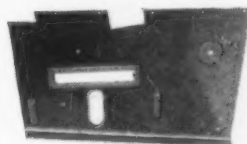
Electrical Control Units



Home Appliance Stands



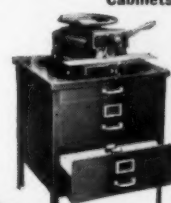
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Special Parts



Storage Battery Racks



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Water Cooler Containers

### CONTRACT PRODUCTION OF SHEET STEEL ITEMS

(Gauges from 8 to 30)

Here's how you can speed up plant expansion, boost production, or turn surplus steel inventory into cash.

(1) If you can supply us with 12 to 24 gauge sheet steel, we will supply you pound for pound with any selection of Lyon standard products now in production.

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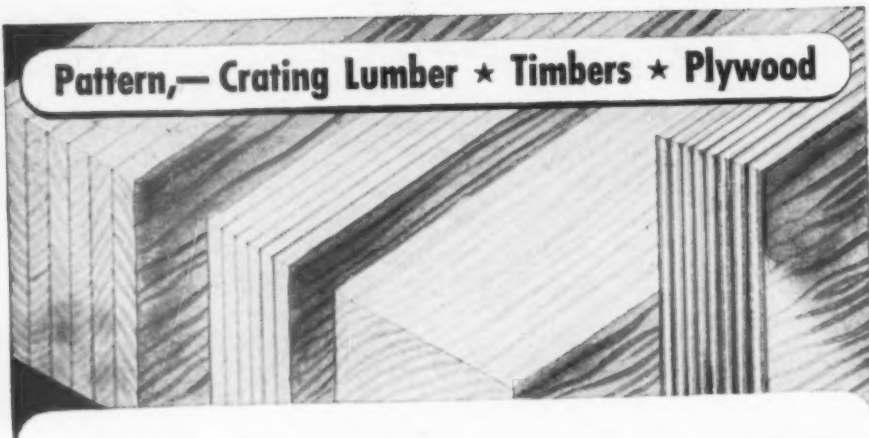
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| • Lockers              | • Display Equipment | • Cabinet Benches | • Bench Drawers    | • Shop Boxes | • Service Carts | • Tool Trays • Tool Boxes |
| • Wood Working Benches | • Hanging Cabinets  | • Folding Chairs  | • Work Benches     | • Bar Racks  | • Hopper Bins   | • Desks • Sorting Files   |
| • Economy Locker Racks | • Welding Benches   | • Drawing Tables  | • Drawer Units     | • Bin Units  | • Parts Cases   | • Stools • Ironing Tables |



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<b>LUMBER COMPANY</b>		

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Quality Products for Over 35 Years

## Research and Purchasing

(Continued from page 316)

that research is a mysterious function of industry that must be handled by a chosen few of eccentrics and experts. While it is understood that if there was a full understanding of what was being done, where research is concerned, it would not be research at all, nevertheless it is often the case that the actual unknowns boil down to a few important questions that must be answered.

The present research into the production of "city" gas and high octane gasoline is an excellent example of this. Actually the research is concentrated on methods of handling the large amounts of bituminous coal profitably. The engineering knowledge necessary for conversion of coal to gas and gasoline has already been established. While it is true that all of the processes involved are fully understood, research must still be carried on to smooth out the process so that it will function smoothly on the gigantic scale that American commercial operations require.

This understanding of what research is, by the purchasing department, is an important element since it puts the procurement branch of the company in position to make real contributions to any program. The reason these contributions can be made is because what is often considered "research" is merely the adaptation or combination of techniques used in one industry to another. This adaptation of technique is more common today than ever. The technique of the aeronautic industry is rapidly being used in a variety of instances from manufacturing to use in new machines.

Too many times engineers misunderstand the problems of purchasing. Research engineers, in particular, may overlook the fact that shortages plague purchasing departments from one day to another. Closer working of research and purchasing departments will do much to make each understand the other's problems and pave the way for better all around results.

The new trend in research is to get cooperation among industries and within the departments of given companies. For the general good it will be found that it is most advantageous for any organization to make research programs the responsibility of both purchasing and engineering when outside assistance with equipment, materials, and advice are necessary.



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**CLEANING COMPOUND**

DISSOLVES  
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The proven choice of many as the better, faster CLEANER. Saves labor! Cuts cleaning costs! Added to water makes the proper strength solution for each cleaning job requirement. It's dustless, non-caking—deodorizes, freshens. Gentle for hands, surfaces. Ends need for dangerous fluids.

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## The XYZ of Purchasing

(Continued from page 108)

lihood, the salesmen in question have revised their opinion through their contacts with the advancing science of purchasing, but we can scarcely expect them to take pen in hand to correct an earlier opinion. So the new generation of marketers is fed the 1927 version of getting past the purchasing agent, and they in turn will have to unlearn what they read in the textbooks when they face the reality of marketing industrial goods in 1947.

### Enlighten Authors

But suppose the Committee on Education, representing more than 10,000 purchasing executives in the National Association and armed with the incontrovertible facts of purchasing influence and authority in those 10,000 plants and organizations, were to provide the authors with this current information, a courteous suggestion would be in order: "In the light of these developments and the facts of current business practice, you may wish to revise the paragraph appearing on page 337, Chapter XIX. We shall be glad to furnish further specific information on industrial purchasing upon request." Until we have made this educational effort on our part, we have little cause to scream or to denounce or ridicule.

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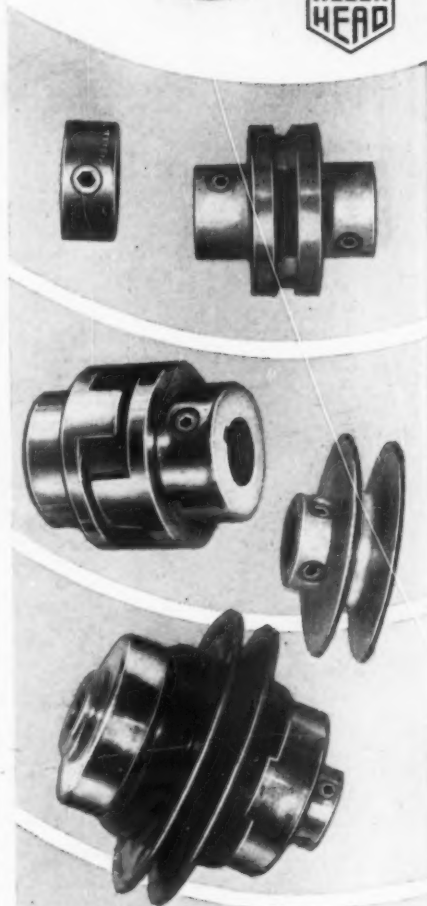
Let's tackle this problem of education at the source, and not concern ourselves only with the deficiencies of the end-product.

# ALLEN

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*Applications*



In collars, pulleys, couplings of all types, ALLEN Hex-socket Screws grip with never a slip. Formed and threaded by Allen-perfected processes, applied selectively to produce the strongest precision screw in a given size. High Class 3 fit standard; Class 4 on special order. Call your local Allen Distributor for samples or demonstration.

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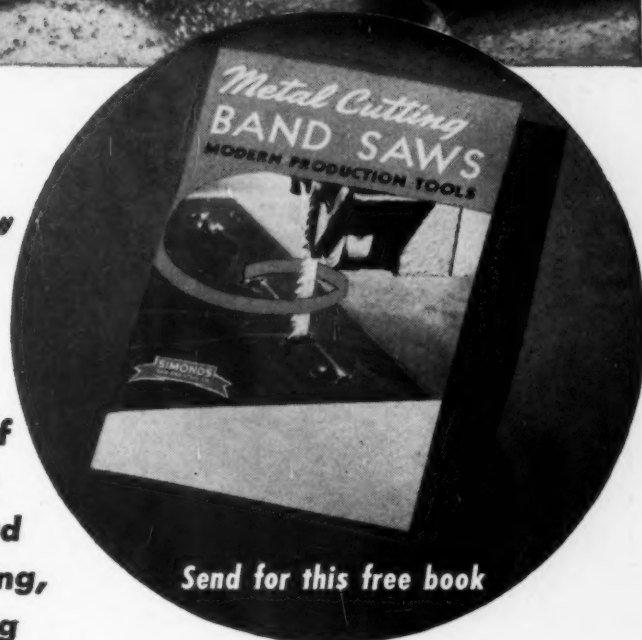


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(Continued from page 108)

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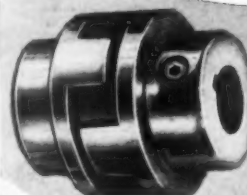
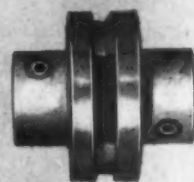
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# ALLEN

## HEX-SOCKET SET

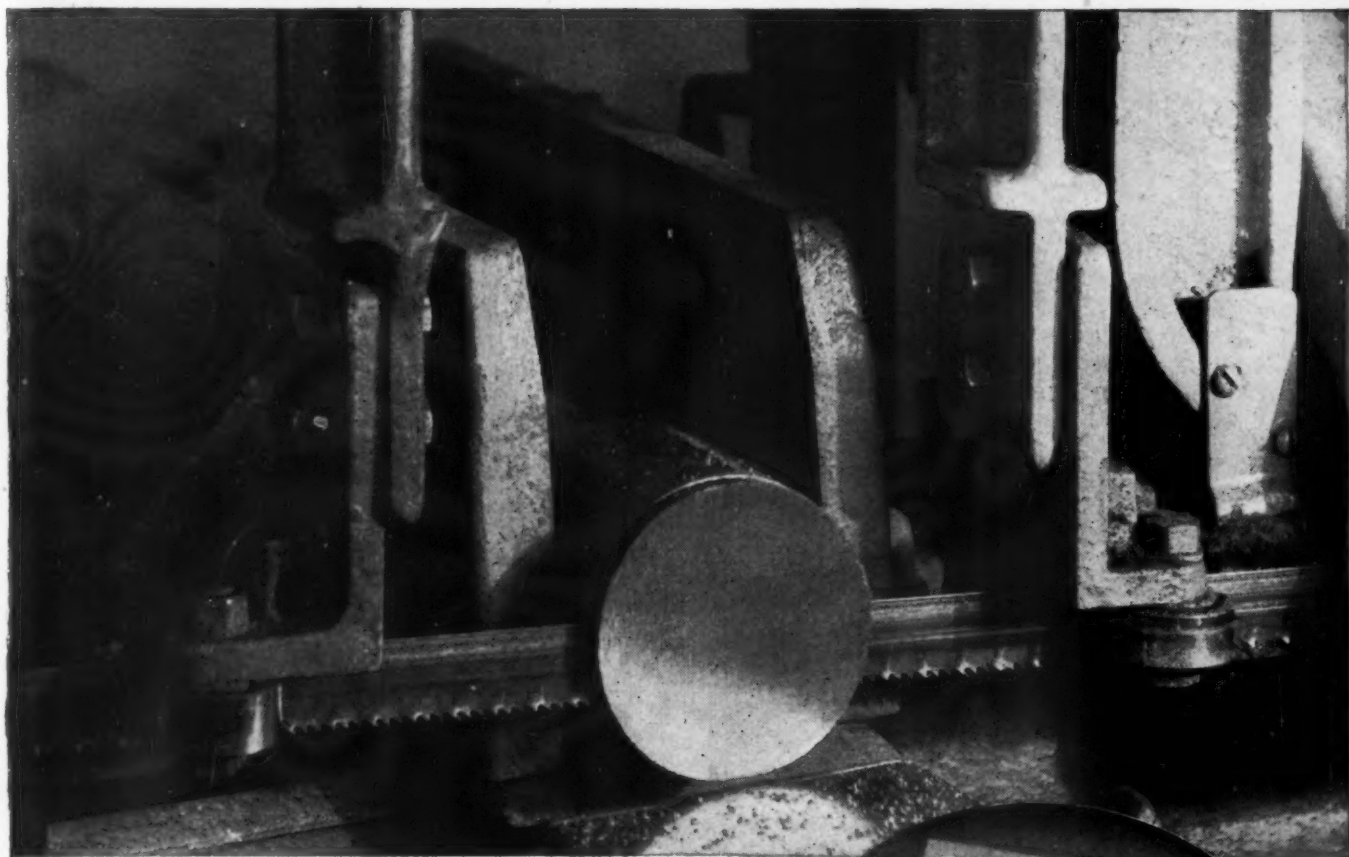
### SCREW

*Applications*



In collars, pulleys, couplings of all types, ALLEN Hex-socket Screws grip with never a slip. Formed and threaded by Allen-perfected processes, applied selectively to produce the strongest precision screw in a given size. High Class 3 fit standard; Class 4 on special order. Call your local Allen Distributor for samples or demonstration.

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Cutting . . . instead  
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Getting to be a "Big Parade" . . . the way shops are swinging to metal band-sawing . . . and keeping their one-purpose machines free to do the work for which they were designed.

Simonds Metal-Cutting Band Saws can do a score of jobs, and do them all at top speed and accuracy . . . cut-off work, contour cutting, and cutting of irregular shapes like jigs, dies, fixtures, as well as heavy straight production cuts . . . and many other similar jobs.



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● "The best way to add to your sales force without increasing sales expense is to always keep the Purchasing Agent familiar with newly developed products for which his plant may have a need," says Mr. Whitney, Socony-Vacuum's City Division Industrial Sales Manager, "and I insist our salesmen keep Purchasing Agents in their territory informed of developments and improvements as they occur. It's a friendly and helpful way to increase sales."

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Write for further facts to: *Purchasing*, 205 East 42nd Street, New York 17, N. Y. Offices in Chicago, Cleveland, Los Angeles.

# PURCHASING

THE NATIONAL MAGAZINE FOR PURCHASING EXECUTIVES



A CONOVER-MAST  
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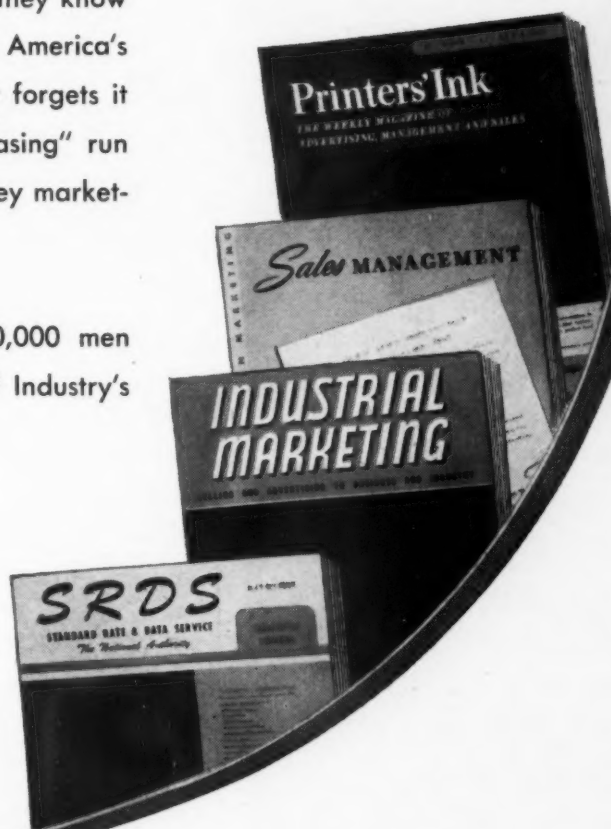


## "Front Door Business..."

The soundest and most fundamental principle in selling to industry today lies in selling through the "front door" — through the office of the Purchasing Agent.

Most successful Sales Managers like Mr. Whitney know this, but just to make sure that every one of America's Sales Executives know it — and that nobody forgets it — the publishers of your magazine "Purchasing" run advertisements like the one opposite, in the key marketing magazines of the country.

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BRANCHES IN LEADING CITIES

## Fix the Roof While the Sun Shines

(Continued from page 126)

meet the tremendous responsibilities of this job, I think that these specifications should be included:

He must develop a sponge-like faculty of assimilating ideas, techniques and purchasing experiences.

He must be sufficiently tenacious to keep learning over and over again, the things he thought he already knew.

He must find time to read, and be able to extract from the plethora of commentaries, digests, forecasts and economic literature generally, such ideas and methods as will augment his own education and his usefulness to his organization.

He must have the courage of his own, not other people's convictions.

He must be willing to make his contribution in time and effort to the reservoir of purchasing knowledge, through close association with his fellow purchasing men.

He must be a judge of human nature, a keen analyst, a fair appraiser, a firm believer in equitable dealing, an apostle of fair play, of unquestioned integrity and uncompromising loyalty.

Above all he must have faith in America.

These in my opinion are some of the additional tools purchasing agents will find useful to assist in the job of fixing the leaky economic roof. We would do well to remember the copy-book story and begin the job now. It won't get fixed if everybody sits back and does nothing so long as the sun shines.

Let's not wait for the thunder rumble and the rainpour. It's too important.

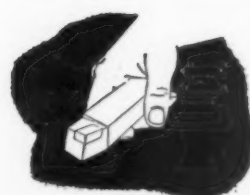
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## SURPLUS PRODUCTION MACHINERY AT FIXED PRICES

Certain items of surplus production machinery and equipment, formerly sold at prices established by the Clayton Formula, now will be sold at fixed prices according to condition, War Assets Administration said recently in announcing a revision of WAA Regulation 13.

The equipment consists of many types of compressors, generators, motors, internal combustion engines, pumps, engine generator sets and sawmills. Under the Clayton Formula, prices were determined by the length of time equipment was in active use.

Prices of certain woodworking and foundry equipment will remain on the Clayton Formula basis.



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So it's no wonder that this plant, like many others, relies on Crane for piping materials. Because standardizing on Crane offers this 3-way advantage:

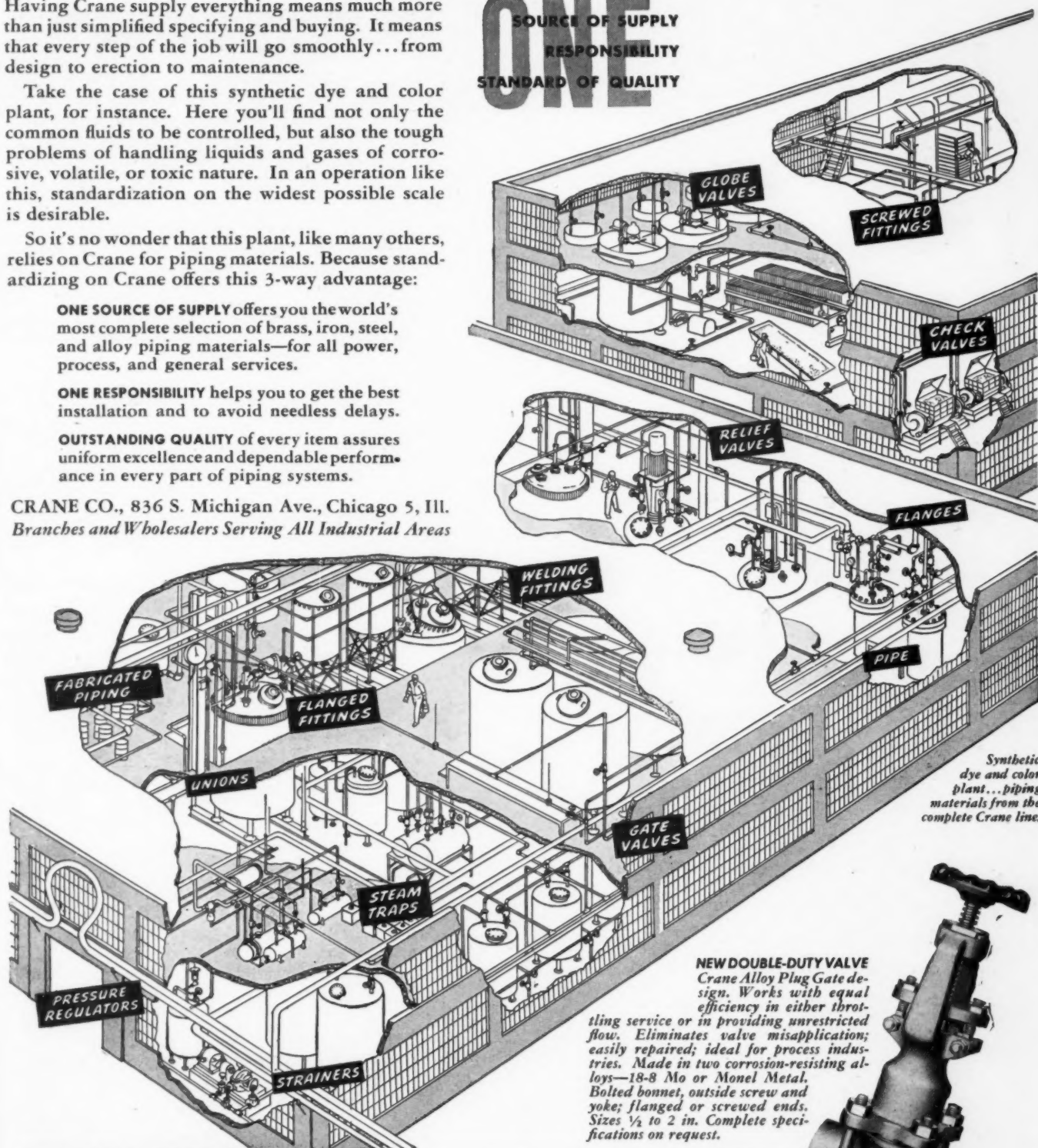
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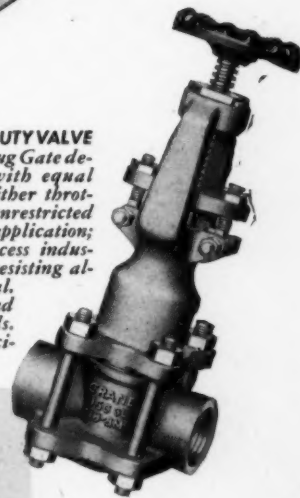
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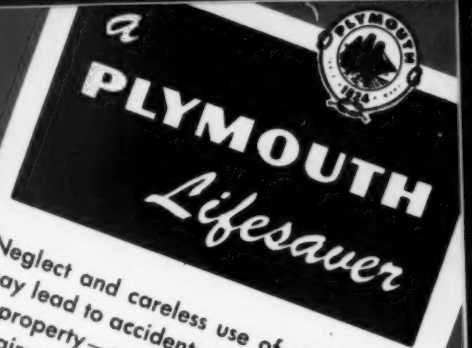
For example, are you putting **PURCHASING** to work obtaining free charts, manuals, catalogs, booklets, and bulletins describing the latest equipment and materials that will improve your plant's operations and product?

For the best of the month's offerings, see page 14 of this issue. Check off what you want on the business reply card at the bottom of page 19, mail to us.

When we asked a cross section of **PURCHASING** readers to rate the articles and features of a typical issue in order of their importance, the Free Informative Literature Section proved to be well in the first division.

Your catalog file will always be up to date if you cultivate the excellent habit of looking over the free literature offerings each month, and letting **PURCHASING** obtain for you what you want.

# HOW TO TAKE PROPER CARE OF YOUR ROPE



Neglect and careless use of good rope may lead to accidents to men—damage to property—and costly plant delays for repairs. The 14 steps shown here will assure longer, safer, more profitable use of rope in any job.

## 1. BE SURE TO BUY A GOOD ROPE—ENGINEERED FOR YOUR JOB

## 2. REMOVE ROPE FROM COILS PROPERLY

When removing the usual right-laid rope from the coil, make sure that it unwinds in a counter clockwise direction. Lay coil flat on the floor with the inside end at the bottom. Pull end of rope up through center of coil.



## 3. STORE ROPE PROPERLY

A dry, unheated room with free-air circulation is the best place to store rope. Place rope in loose coils off the floor on wooden grating, or hang on a wooden peg.



## 4. DRY ROPE PROPERLY AFTER WETTING

A wet rope should never be stored—make sure that it is thoroughly dry, to avoid loss of life and strength.



## 5. KEEP ROPE CLEAN

If your rope gets dirty, wash with clean water—dry thoroughly before storing.



## 6. DON'T OVERLOAD ROPE

The safety factor of a rope is the ratio between minimum breaking strength and the load applied. A safety factor of 5 is recommended under ordinary circumstances. Allow for the condition of the rope when determining the safety factors.



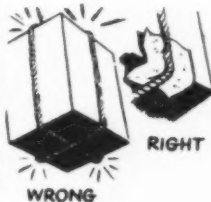
## 7. SLACK OFF GUYS

When ropes are used as guy lines and other supports, exposed to weather, they should be slacked off to prevent overstrain due to shortening from wetting.



## 8. AVOID SHARP ANGLES OF BENDS

While fiber rope is more elastic than wire rope, it is good practice not to subject it to sharp bends, which reduce the tensile strength of rope by putting extra strain on the outer fibers.



## 9. SHEAVE ROPE RIGHT

Small sheaves increase both the wear on rope and the friction load. Never use a smaller sheave than is recommended for the size of rope you are using.



## 10. REVERSE ENDS

Reverse rope, end-for-end, periodically, as in tackle use, so that all sections of the rope will receive equal wear. When rope wear is localized in a short section, periodical shortenings present a new wearing surface.



## 11. DON'T LUBRICATE YOUR ROPE

A well-made rope is properly lubricated by the manufacturer—and is adequate for its service life.



## 12. AVOID KINKS

If the use of rope involves continual twisting in one direction, compensating turns must be thrown in or out to avoid damage to the rope structure.



## 13. AVOID UNNECESSARY WEAR AND ABRASION

Surface wear may come from allowing one rope to chafe another, or by dragging it over sharp or rough objects.

When rope must run over some surface, such as cleats, winchheads, etc., be sure that the surface is smooth.



## 14. PROTECT ROPE FROM CHEMICALS

Many chemicals are very injurious to rope fibers. Rope should not be stored in close proximity to chemicals, especially acids, alkalis or fumes.



**Plymouth Cordage Company**  
Plymouth, Massachusetts

# ROPE SIZES *and* STRENGTHS

**NOTE:** These specifications are for three strand rope with standard lay. To figure safe loads use at least a 5 to 1 safety factor.

NOMINAL SIZE			NET WGT. OF 100 FEET	MINIMUM LENGTH IN ONE POUND (NET WGT.)	APPROXIMATE GROSS WGT. FULL COILS	MINIMUM BREAKING STRENGTH	
THREADS	CIRCUMFERENCE	DIAMETER				PLYMOUTH SHIP BRAND MANILA	PLYMOUTH SISAL
	Inches	Inches	Pounds	Feet	Pounds	Pounds	Pounds
6-Fine	9/16	3/16	1.47	67.9	50	450	360
6	3/4	1/4	1.96	51.0	50	600	480
9	1	5/16	2.84	35.2	50	1,000	800
12	1 1/8	3/8	4.02	24.9	50	1,350	1,080
15	1 1/4	7/16	5.15	19.4	63	1,750	1,400
18	1 3/8	15/32	6.13	16.3	75	2,250	1,800
21	1 1/2	1/2	7.35	13.6	90	2,650	2,120
	1 3/4	9/16	10.2	9.80	125	3,450	2,760
	2	5/8	13.1	7.65	160	4,400	3,520
	2 1/4	3/4	16.3	6.12	200	5,400	4,320
	2 1/2	13/16	19.1	5.23	234	6,500	5,200
	2 3/4	7/8	22.0	4.54	270	7,700	6,160
	3	1	26.5	3.78	324	9,000	7,200
	3 1/4	1 1/16	30.7	3.26	375	10,500	8,400
	3 1/2	1 1/8	35.2	2.84	432	12,000	9,600
	3 3/4	1 1/4	40.8	2.45	502	13,500	10,800
	4	1 5/16	46.9	2.13	576	15,000	12,000
	4 1/2	1 1/2	58.8	1.70	720	18,500	14,800
	5	1 5/8	73.0	1.37	893	22,500	18,000
	5 1/2	1 3/4	87.7	1.14	1,073	26,500	21,200
	6	2	105.	.949	1,290	31,000	24,800
	6 1/2	2 1/8	123.	.816	1,503	36,000	28,800
	7	2 1/4	143.	.699	1,752	41,000	32,800
	7 1/2	2 1/2	163.	.612	2,004	46,500	37,200
	8	2 5/8	187.	.534	2,290	52,000	41,600
	8 1/2	2 7/8	211.	.474	2,580	58,000	46,400
	9	3	237.	.422	2,900	64,000	51,200
	9 1/2	3 1/8	264.	.379	3,225	71,000	56,800
	10	3 1/4	292.	.342	3,590	77,000	61,600
	11	3 1/2	360.	.278	4,400	91,000	72,800
	12	4	426.	.235	5,225	105,000	84,000

Standards: Smaller sizes of ropes are usually ordered by the number of threads, the larger sizes by circumference. 6, 9, and 12-thread rope is packed in standard 25 and 50 lb. coils. All larger sizes are put up in full coils of 200 fathoms—in half coils of 100 fathoms. One fathom equals six feet.

\*IN THE FOUR SIZES INDICATED BY A STAR, present-day Plymouth Manila and Plymouth Sisal Rope have a minimum breaking strength slightly under that shown in the Federal Specification (TR-601A) columns.

\*\*The figures shown in this column are 80% breaking strength of Manila rope Federal Specification TR-631 Amendment 2, dated March 15, 1944 permits minimum breaking strength to be reduced to 75% of that of Manila.

**FREE!** Plymouth will gladly mail you upon request additional copies of this valuable chart for every department of your plant or shop where rope is used. Foremen and workers will find it useful in protecting life and property—saving rope—cutting costs!

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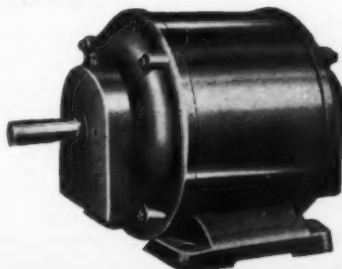
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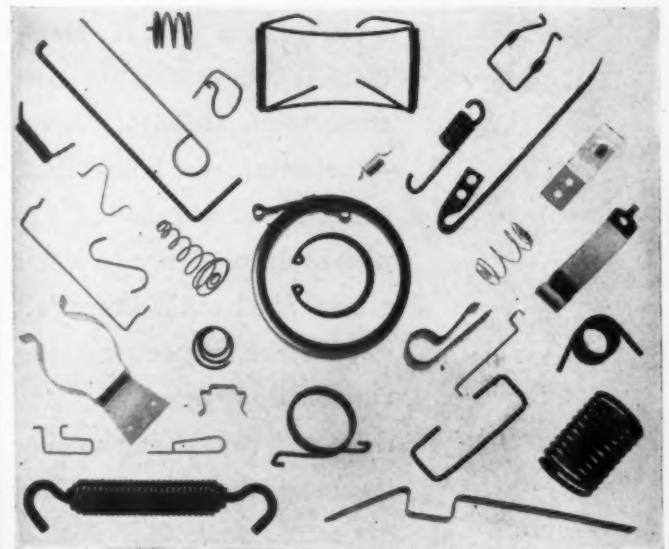


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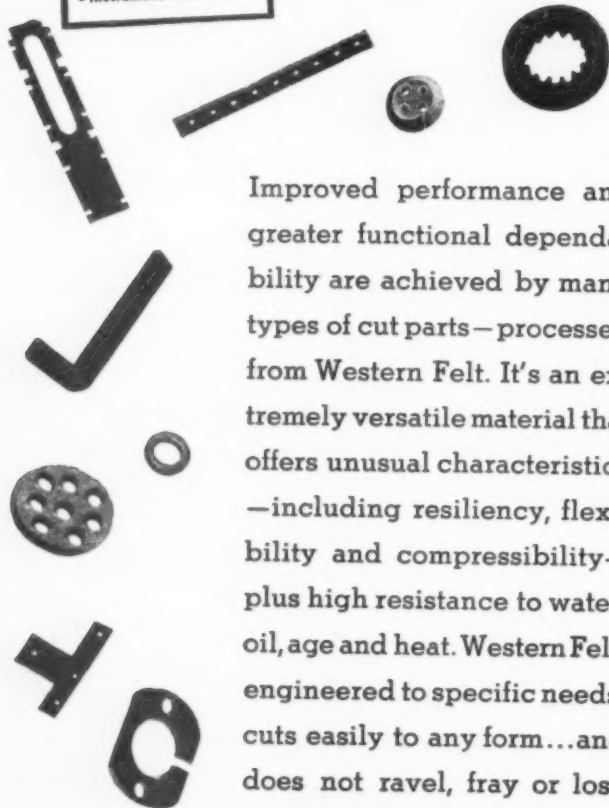
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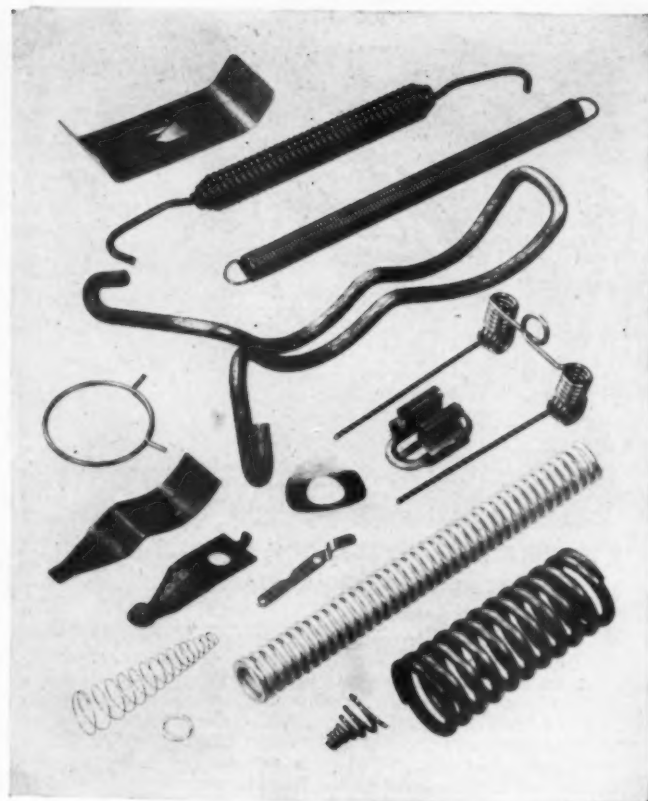
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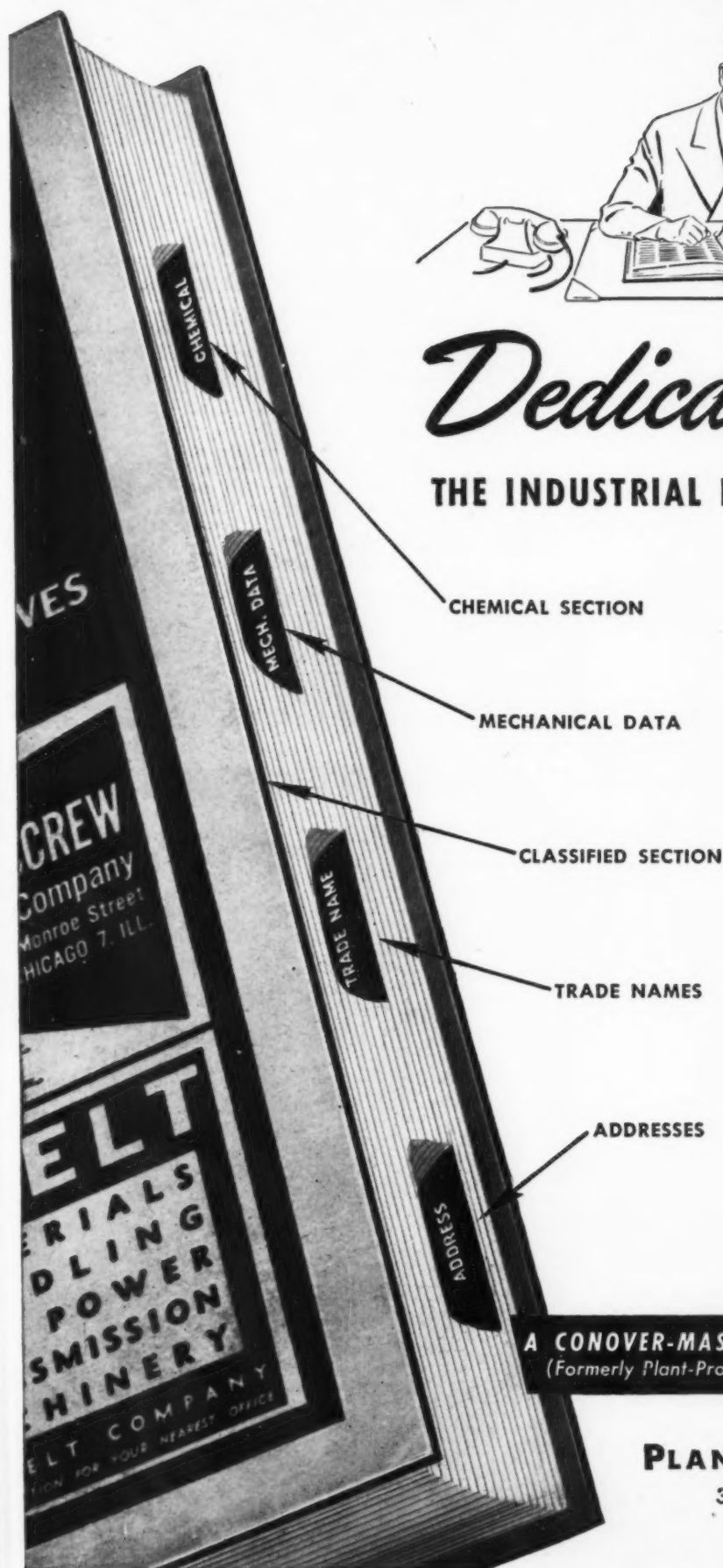
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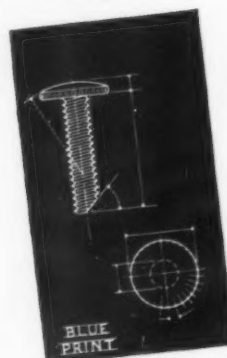
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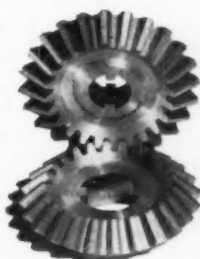
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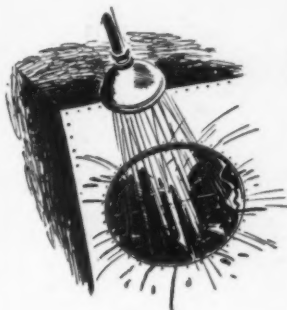
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There's comfort here too. Science studied how a man stoops, reaches, twists when he works—and these garments set true at neck and shoulder. Get the best with "U.S."



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**U. S. INDUSTRIAL  
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Sold only through Industrial and Retail Stores

*As Basic*  
as **A-B-C...**  
OUR  
**UNUSUAL**  
**SPRING SERVICE**

Lewis is recognized by more and more customers every day as an unusual source of springs. In these days of "synthetic" materials, mediocre workmanship and undependable service, they find it a real pleasure to be assured of our consistent high quality materials, expert workmanship and dependable service. Lewis prides itself on three basic features:

**A. Engineering and Know-How...** Lewis engineers, experienced in all phases of spring design and production, are available to work with you at all times. They give you the necessary time, thought and attention to solve any spring problem you may have, no matter how large or small. They help assure you of the best and most economical springs for your products.

**B. Methods and Equipment...** Latest equipment operated by skilled workmen insure springs of high quality. Modern control, testing and inspection techniques used by Lewis are your safeguards against inferior products. You'll understand why our customers often refer to "unusual" Lewis Spring quality.

**C. Attention and Service...** Lewis offers prompt service and delivery, a feature that you will appreciate. Your production schedule is our schedule and expeditors see that products are completed on time.

*There is a Lewis representative near you, ready and anxious to help solve your spring or wireform problems. There's no obligation. Just drop us a line.*

**LEWIS SPRING & MANUFACTURING COMPANY**  
2648 WEST NORTH AVENUE CHICAGO 47, ILLINOIS

**Lewis**  
PRECISION  
**SPRINGS**

THE FINEST LIGHT SPRINGS AND WIREFORMS  
OF EVERY TYPE AND MATERIAL



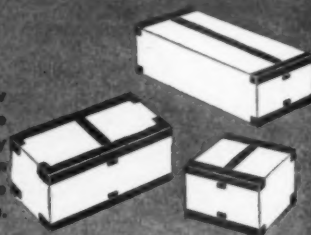
*What in the World*  
*is THIS?*

It's a D.-B. Stencil Cutting Machine. Thousands of progressive companies everywhere use this simple, easy-to-operate device for cutting stencils to address shipments; make notices and signs; number bins; put names on doors; and do countless jobs quickly, easily, and economically. Investigate D.-B. stenciling and marking equipment for your plant. No obligation. Just call the D.-B. Distributor, who is listed in your telephone book under "Stencil Cutting Machines"; or write: Diagraph-Bradley, Dept. K, 3745 Forest Park Blvd., St. Louis 8, Mo. World's oldest and largest stencil machine manufacturer.



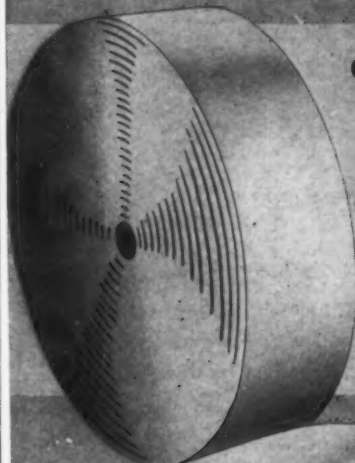
*America's Most*  
*Popular Brand*

All over America shippers know Orange Core sealing tape. They like its speedier, stickier, sturdier quality... the way it steps up production and protects shipments. Orange Core will do a better job for you.



**ORANGE CORE**

*Moistens Fast*  
*Grips Fast*  
*Holds Fast*



**ORANGE CORE**  
*Sealing Tape*

MOORE & THOMPSON, Div. Hudson Pulp & Paper Corp., 220 E. 42nd St., New York 17, N. Y.



## ALERT MANAGEMENT Specifies VACO S/B (Slo-Burning) Drivers



### The VACO Reversible!

It's new! Pull out the blade, turn it around, and you have a Phillips instead of a regular driver. Only electrically heat treated chrome vanadium bits are used in Vaco screw drivers.

173 TYPES AND SIZES



317 E. ONTARIO ST.,  
CHICAGO, ILLINOIS

Now Vaco offers you the new Amberyl Slo-Burning handle embossed with the Underwriters' Laboratories, Inc., Reexamination Service Marker. Ends forever the extreme fire hazard of old style nitro-cellulose handles! It will pay you to investigate this latest improvement in the full Vaco line of shock and break proof screw and nut drivers.

*Make Friends with a VACO!*



People can't resist the appeal of this useful little tool. It's an ideal give-away . . . inexpensive in promotion or premium lot quantities. Your name imprinted in gold, silver or other color on Amberyl handles.



## For PERMANENTLY Tight Joints

*Particularly Effective on joints subject  
to Vibration, Expansion or Contraction*

GARLOCK Pipe Thread Compound is a superior material developed in the Garlock laboratories for application to threaded joints of pipe lines and other equipment handling steam, water, gas, air, hot or cold oil, gasoline, kerosene or alcohol.

You can depend on GARLOCK Pipe Thread Compound to make a permanently tight joint even under difficult conditions, as it will not harden, shrink or corrode. In fact, it protects joints from corrosion, rust and "freezing."

GARLOCK Pipe Thread Compound, ready to apply as it comes from the can, is handy to use and is economical—only a thin coating is required to make a joint. Does not spoil or deteriorate if kept in stock for long periods of time. Available in 2-lb., 4-lb. tin cans and in larger containers.

THE GARLOCK PACKING COMPANY  
PALMYRA, N. Y.

In Canada: The Garlock Packing Company  
of Canada Limited, Montreal, Que.



**Does Not Harden  
or Shrink**

**Keeps Joint from  
"Freezing"**

**Protects Against  
Rust and Corrosion**

**Does Not Drip**

**Does Not Spoil  
or Deteriorate**

*Garlock*

**PIPE THREAD  
COMPOUND**

Millions of  
Billings Wrenches  
carry this  
Trade Mark



# If it's a FORGING *See Billings*

The simple, rugged forged parts are daily routine. Mixed in are the precision close tolerance jobs. They're all the same to Billings Forging Engineers—Production!

WRITE OUR FORGINGS DIV. Dept. SF-3

**THE BILLINGS & SPENCER CO.**  
MAIN OFFICE AND PLANT  
HARTFORD, CONN. U. S. A.

# LETTERS . . .

## "TIMETABLE" VALUABLE

Will you please advise if it is possible for you to obtain at least a dozen copies of the article "Product Delivery Information" as shown on pages 131-134 inclusive of the June, 1947 issue of PURCHASING?

We find this information especially valuable as regards to placing orders in advance for scarce items.

C. W. Spahr, Purchasing Agent  
The Babcock & Wilcox Tube Co.  
Beaver Falls, Pa.

Clippings have been mailed for the current "Product Delivery Information," see page 121.—Ed.

## "BASIC PRINCIPLES" INDISPENSABLE

Several of our friends have mentioned that no purchasing office should be without a copy of "Basic Principles of Purchasing," and further that they have found it of great value to themselves.

We should be pleased if you would furnish us with two copies with bill.

F. L. Morgan, General Purchasing Agent  
American President Lines  
San Francisco 4, Calif.

Price of the 100-page "Basic Principles of Purchasing," by Stuart F. Heinritz, editor of PURCHASING, is \$1. This booklet is a reprint of the series originally published in PURCHASING.—Ed.

## PACKAGING

We have read, with interest, the article on "Packaging and Materials Handling," by George E. Henry, in your June issue.

What is the address of the Industrial Packaging Engineers Association of America,

R. L. Dowrick  
Arabian American Oil Co.  
San Francisco, Calif.

20 W. Jackson Blvd., Chicago 4.—Ed.

## COMPLIMENTS OF THE CAPTAIN

I wish to express my appreciation of the excellent article which appeared in May 1947 issue entitled "The Philosophy and Significance of the Purchasing Function," by Stuart F. Heinritz. It is a highlight to a succession of interesting and instructive articles which have appeared in PURCHASING.

My interest in purchasing for the Navy has been continuous over a number of years; I had the assignment of instruction in purchasing at the Supply Corps School when it was organized at the Philadelphia Navy Yard some years back, and I have been intensely concerned in how the essentials of purchasing might be met within the framework of governmental rules and regulations.

I find the issues of PURCHASING of constant interest, and much value. Especially have I enjoyed the efforts of the Ford Motor

Co. to decentralize purchasing functions, yet maintain control. Herein, it seems to me, lies a great opportunity for Federal purchasing.

Captain C. J. Harter SC USN  
Comdt. Staff-Potomac River  
Naval Command  
US Naval Gun Factory  
Washington 25, D. C.

## LADY P. A.'S

How many women purchasing agents are there? Assistant Purchasing Agents?

How many women would you say, in industry, have something to say about the specification, selection, and purchase of industrial equipment?

W. V. Cunningham, Manager  
Industrial Department  
Western Advertising Agency  
Chicago 1, Illinois

There are four organized groups of women purchasing agents: Washington, D.C.; Chicago, Memphis, and Seattle. Total membership of the four is about 110. Many other purchasing associations have women members, totalling about 50 women members. Aggregate NAPA women membership is therefore about 160. Non NAPA women purchasing agents number about 90. Any estimate of the number of assistants would be sheer guesswork.—Ed.

## LOGISTICAL AID

Would you be good enough to send me the literature that I have checked on the attached card as listed in your Free Informative Literature Section by number. You may wonder why an institution such as The Industrial College of the Armed Forces is interested in such material as we are requesting. For your information, the College trains senior Army and Naval officers for service in the field of logistics planning for the War and Navy Departments.

Walter R. Godard, Lt. Col., AC  
The Industrial College of the Armed Forces  
Washington, D. C.

## IT'S A SMALL . . .

I find your publication most interesting. I had never before realized just how interesting a trade journal of that type could be.

A rather amusing coincidence occurred in connection with a recent copy of PURCHASING. I was having coffee in a downtown restaurant and thumbing through the magazine when Omaha caught my eye. There was mention of a man having recently been transferred here from another city. His picture was also used. Words fail me when I try to explain the feeling I experienced when I glanced up and saw the same gentleman sitting at the table next to me.

Mary Ann Larsen  
The University of Omaha  
Omaha, Nebraska

## ADD INSULATION

We have been interested in your new feature, "Product Delivery Information".

We are wondering if you intend to continue publishing this information, which is very interesting to us. We, of course, have other items, which would also be greatly interesting, such as electrical insulation, which would include such items as Mica, Bakelite, Cotton Tape, etc.

A. D. Foote, Purchasing Agent  
Electrical Division  
Allis-Chalmers Manufacturing Co.  
Milwaukee 1, Wisconsin

"Product Delivery Information" is a regular monthly feature. The items are changed at intervals, with changing conditions. In the course of time most kinds of materials and equipment in general use will be covered.—Ed.

## "BUYER'S NOTEBOOK" RESUMES

In your June issue we missed your "Buyer's Notebook." I think that it, along with your Legal Decisions and New Products, are the most interesting and useful features.

In my estimation, the outstanding features of your June issue are the articles on castings, the new Westinghouse electric motor, and the one about Henry Ford. Of course, the advertisements are always very good.

E. N. Hayes, Jr., Purchasing Agent  
The Ready-Power Company  
11231 Freud Avenue  
Detroit 14, Michigan

The "Buyer's Notebook" was dropped from June and July issues because of heavy space demands, but this popular feature is resumed with this issue. See page 91.—Ed.

## "FINE PIECE OF WORK"

I want to express my appreciation for the very effective section on the Department of Commerce which was included in your April issue. Your Mr. Weckslar did a fine piece of work on it and we know that it will call the attention of a great many progressive businessmen to the services offered by the Department.

W. A. Harriman, Secretary of Commerce  
Washington, D. C.

## REQUEST TO COPY

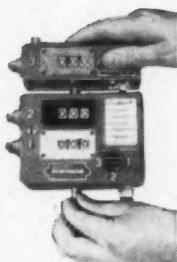
Your March issue contains a very interesting article entitled "Distributor Cooperation—An Important Aid," by Ira C. Jared.

We would like very much to furnish our field personnel with copies of this article, and with this in mind, we are asking your permission to copy it in its entirety.

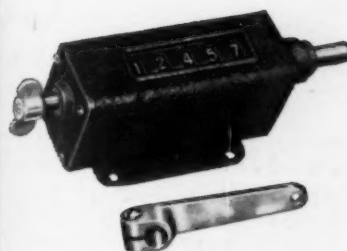
F. L. Wiegand, Jr.,  
Oil Well Supply Company  
Dallas, Texas

Granted.—Ed.

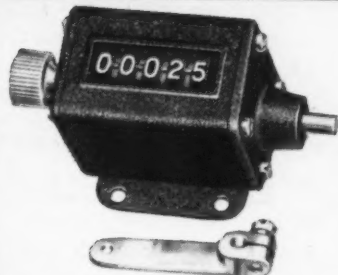
You Can  
**COUNT**  
on  
Veeder-Root  
Devices  
in more ways  
than you can  
think of



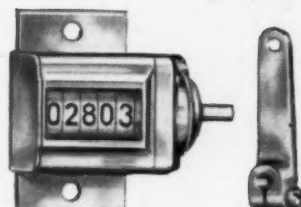
**2-3 Pick Counters** record the production of textile looms. Can be economically converted from 2 to 3 shift operation right in the mill.



**High-Speed Reset Counters**, used on coil-winders, etc.



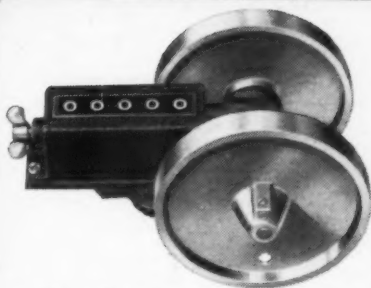
**Small Reset Counters**, used on office and light production machines.



**Small Square Case Counters**, used on cash registers, office appliances, etc.



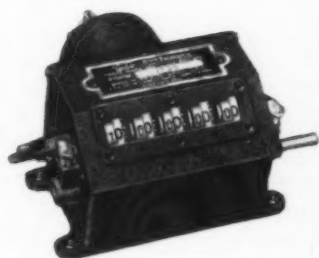
**Hand Tally**, adds one for each pressure on thumb-lever.



**Worm-Driven Counters** indicate in yards, feet, meters, other units.



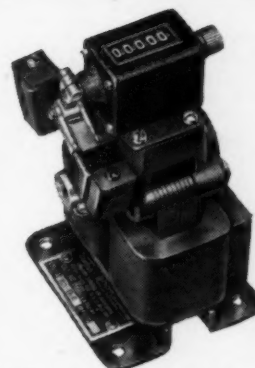
**Heavy-Duty Ratchet Counters** count strokes on punch presses, etc.



**Predetermining Counters** stop machine or signal operator at pre-set count. Prevent overruns & shortages.



**Medium Size Counters**, used on machines of moderate speeds.



**Magnetic Counters** flash machine-output from factory to office, etc.

"VEEDER-ROOT COUNTS EVERYTHING ON EARTH" . . . motions, pieces, units, distances, light-flashes, gunfire, people, coins, sales, flow of fuel and water . . . and whatever *you* have in mind. Scores of different types of standard Veeder-Root Counting Devices are built into all types of products to add new utility, marketability, *profitability*. And special Veeder-Root Devices are continually being designed to do remarkable things in unheard-of applications. For a quick picture of counting possibilities, write for the new, brief book of "Facts-in-Figures."

**Veeder-Root**  
INCORPORATED  
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In Canada: VEEDER-ROOT OF CANADA, LTD.  
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NEW ENGLAND

**PRESSED STEEL COMPANY**

Contract Manufacturers since 1914

METAL STAMPINGS

SPECIALTIES — APPLIANCES

For Industrial and Domestic Users

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50, 75, 100, 150, 250 HP Slip Rg. Motors.  
3, 5, 15, 50, 100, 150 HP Induction Motors.  
750 KVA 2300/440 V. Gen D/C Unaflo Eng.  
100 HP, 550 V., 1200 RPM AC Motor. 3/4 & 1  
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Steel Water Tank & Tower. No. 2, 12 & 18  
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MORSE ENGINEERING CO.

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### NEW BRONZE STRIP

For forming High Grade Automotive Bush-  
ings, #610 Phosphorous Bronze strip, 100 ft.  
coils, 1" wide x .062-.064 and 1 1/2" wide  
x .062-.064. A good buy for greater saving.  
Boxed ready for shipment. State your require-  
ments.

NATIONAL MACHINE WORKS, INC.  
P. O. BOX 4305 OKLAHOMA CITY 9, OKLA.

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Approximately 10,500 lbs. 1/2" cold drawn,  
annealed, type 316 stainless steel rod, mill  
lengths, wrapped in Burlap. Will sell all  
or any part; price \$46.50 cwt. f.o.b. Cin-  
cinnati. Subject to prior sale.

THE JOHN VAN RANGE CO.  
Cincinnati 2, Ohio

## CONTRACT WORK

OPEN TIME available on special screw ma-  
chines up to 3/8 capacity. Form, drill and  
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tractive rates on long run work. Box 1120,  
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MACHINE SCREWS—270,000 1.2MM x 3MM x  
.025 Pitch Fill. Hd. M/S; 100,000 0/80 x 1/8  
Hex. Hd. M/S; 2,000 10/24 x 5/8 Stainless  
Steel Socket Cap Screws. Box 1119, PURCHAS-  
ING, 205 E. 42 St., N.Y. 17.

## ONE USED CLEVELAND OPENSIDE PLANER,

48" x 48" x 10' with 3 heads and 440-volt,  
3-phase, 60-cycle SELF-CONTAINED "V"  
BELT DRIVE.

ONE 1,500 CUBIC FEET WORTHINGTON  
FEATHER VALVE AIR COMPRESSOR 100#  
PRESSURE DIRECT CONNECTED TO G.E. 300  
HP SYNCHRONOUS MOTOR, 231 RPM, 2,300  
volts, 50-cycle. NEW.

PRICE \$9,500 — COST NEW \$18,000

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## FOR SALE

Ingersoll-Rand Type 10 Steam driven air com-  
pressor, Serial #14521/2, steam cylinders 24"  
and 14" x 16", air cylinders 23" and 13" x  
16", built for 1000 c.f.m. at 5000 ft. elevation,  
capacity at sea level 1300 c.f.m. at 100 lbs.  
Good working condition and presently in use.  
Available for release in 4-6 months. Reasona-  
bly priced.

BOX 1125 — c/o PURCHASING  
205 E. 42nd St., New York 17, N. Y.

## CONVEYOR FOR SALE

New, unused 24" x 27" Farquhar freight type  
conveyor offered because of elimination of  
department. 5-hp, a-c, 3-phase, 60-cycle, 220-  
volt electric motor, elevating wheel type truck  
with 6.00 x 16 plain bearing wheels with tires  
and tubes, feed end bumper roller, head end  
discharge roller, reversing drum control. Two  
50' lengths #10-4 wire cable with electrical  
fittings, complete with 100' cable. Price:  
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WHITBREAD'S SONS LUMBER CO.  
Box 66 Long Beach, N. Y.

## SALE SURPLUS BOLTS AND NUTS

Over 1,000 tons Machine Bolts, Hex and  
Square Heads

Also Hot and Cold Punched Nuts, Square  
and Hex in Standard and Semi-Finished.

Priced to sell.

**ALBINA TERMINAL**

1133 N. River St. Portland 12, Oregon

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WORK GLOVE REPRESENTATIVE WANTED:  
Direct factory representation to sell work  
gloves to industrial manufacturing plants.  
Industrial contacts necessary. All territories  
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State experience and territory covered. Box  
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YOUNG EXECUTIVE qualified by 16 years  
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manufacturing processes, machinery, materials,  
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traveling experience. Correspondence condu-  
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ASSISTANT DIRECTOR OF PURCHASES, age  
39; presently, and for past 3 1/2 years, em-  
ployed by one of the States operating un-  
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PURCHASING AGENT, 41, twelve years ex-  
perience in all phases of institutional pur-  
chasing; can take over established depart-  
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Dies manufactured to meet requirements

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## SCREW MACHINE PRODUCTS

TO B-P OR SAMPLE

CAP NUTS to G.M. SPEC.

MID-WEST SCREW PRODUCTS CO.

3661 Park Ave.

St. Louis 10, Mo.



"Save us \$50  
worth of  
Assembly Time  
per unit"  
...says  
THE GLOBE WERNICKE CO.

Summary of report by James O. Peck Co., independent investigators, of assembly savings made with Phillips Screws . . . another in the series of assembly studies at prominent plants.

• "We manufacture these units for the Iceberg Refrigerated Locker Systems, Inc.," explained the assembly head of The Globe Wernicke Co. "Our engineering department specified Phillips Screws throughout, and we're glad they did."

"Save us \$50 worth of assembly time per unit. We can take full advantage of power drivers with Phillips Screws. No finder is needed and there's no fumbling such as we'd have with slotted screws. Since each unit requires thousands of screws, \$50 is a conservative estimate of how much we save per unit by using Phillips Screws."

"Upside down or sideways . . . Makes no difference. Screws are driven with the unit in one position so that much of the driving is sideways or upside down. Difficult with slotted screws but very easy with Phillips Screws."

"No gouging or burring. Before we settled on Phillips, we tried out a lot of other type screws and found the driver would jump out and gouge the Masonite panels or burr the heads. Phillips Screws ended that, gave us better driving time with our power drivers."

Help yourself to money-saving ideas for your assembly operations. Write for the full report on The Globe Wernicke Co. and other assembly studies . . . covering metal, wood and plastic products. Use the coupon.

## PHILLIPS *Recessed Head* SCREWS

Wood Screws • Machine Screws • Self-tapping Screws • Stove Bolts

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**24 SOURCES**

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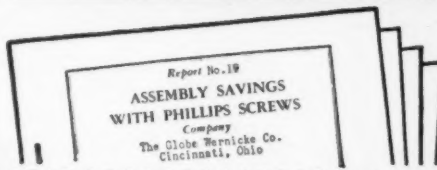
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Sterling Bolt Co.  
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THE ICEBERG REFRIGERATED LOCKER COMPANY'S equipment for frozen food storage is made up in combinations of basic units like this 8-section (10 six-cubic-foot drawers to a section) locker.



The complicated assembly of the drawer of the ICEBERG REFRIGERATED LOCKER . . . made without driver skids to injure work or hands, thanks to Phillips Screws.

Most of the thousands of Phillips Screws used in this assembly are Type "A", self-tapping, and are power driven up, down, and sideways.



Phillips Screw Mfrs., c/o Horton-Noyes  
1800 Industrial Trust Bldg.,  
Providence, R. I.

Send me reports on Assembly Savings with Phillips Screws.

Name .....

Company .....

Address .....

P-20



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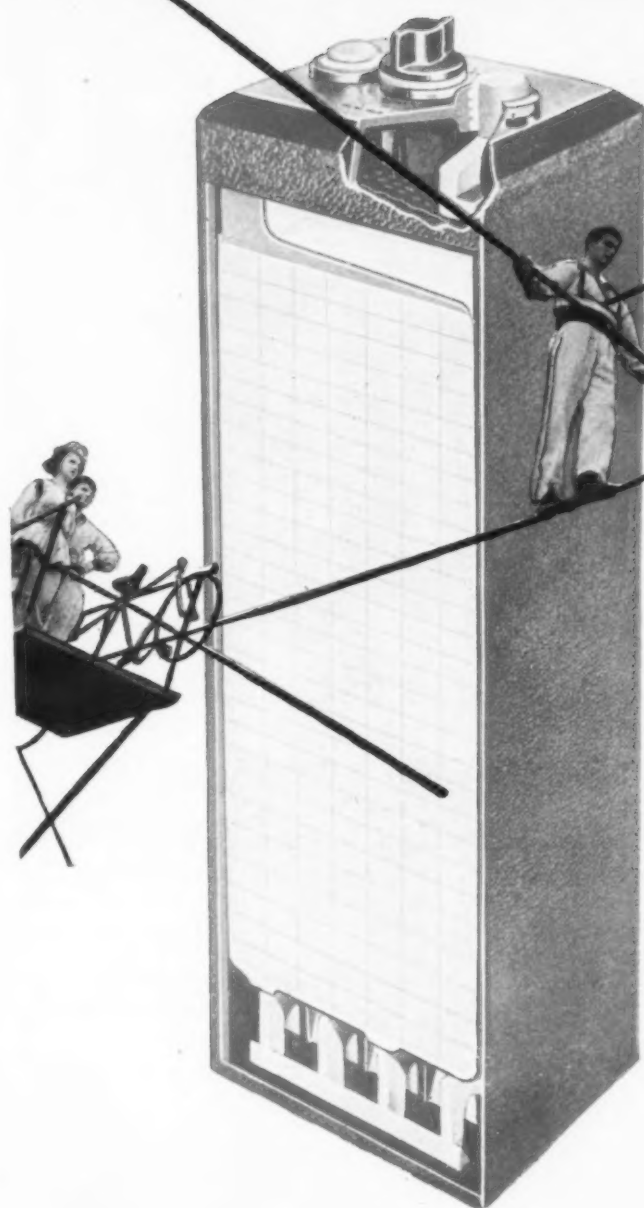
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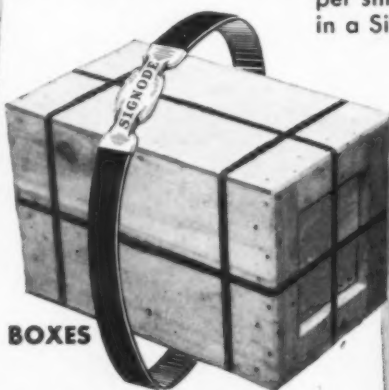
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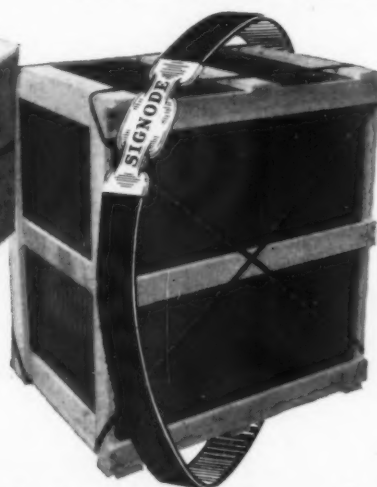
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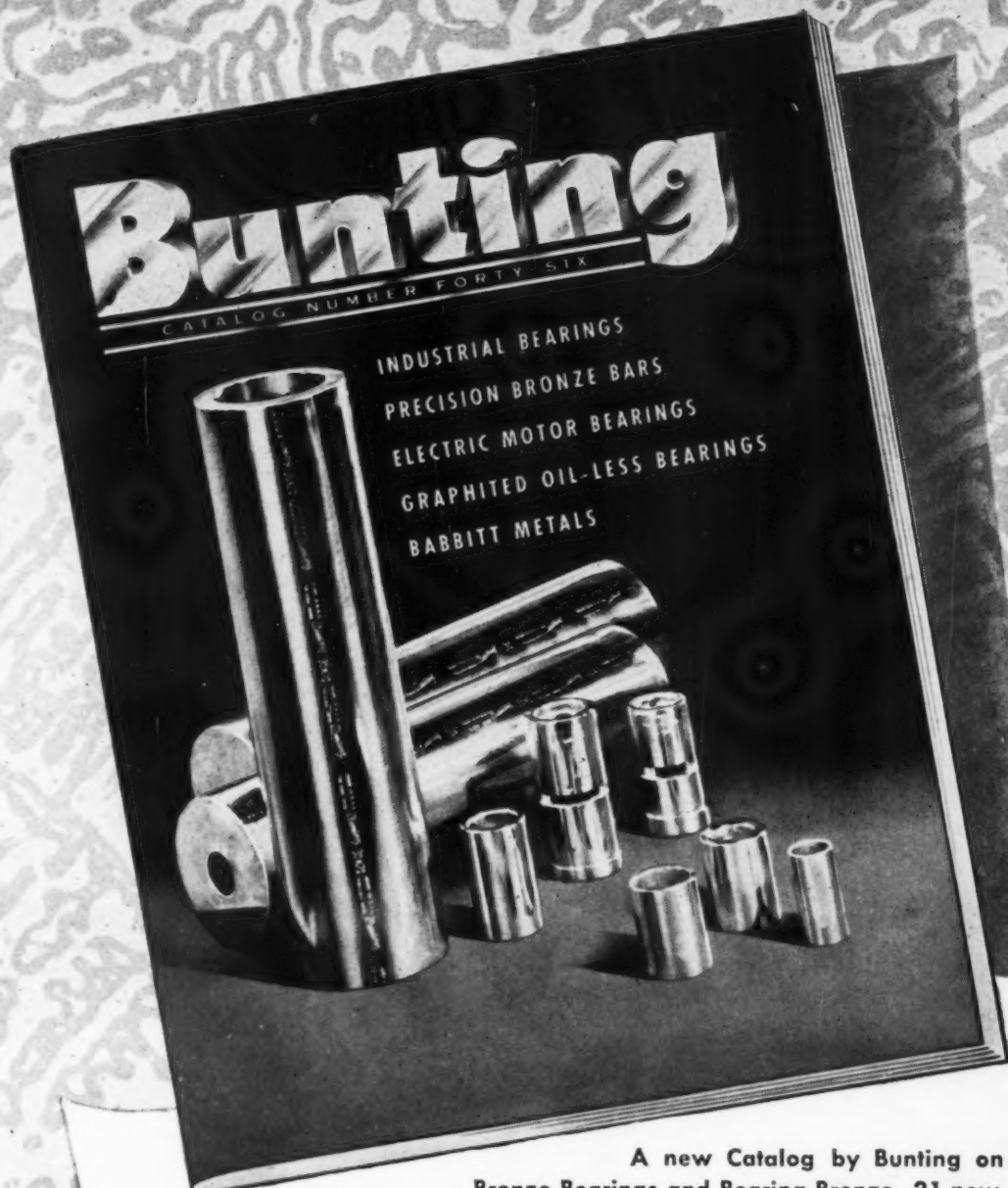
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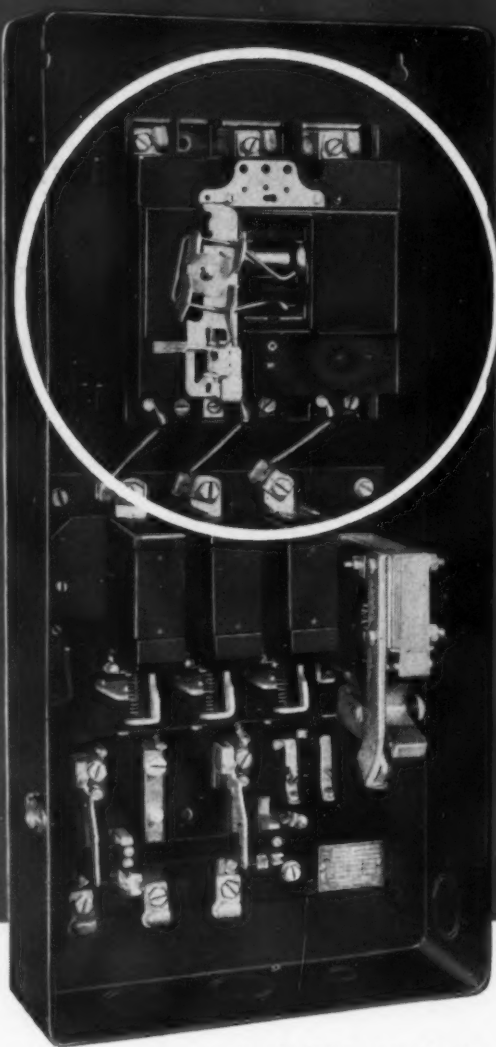
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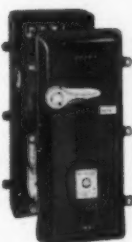
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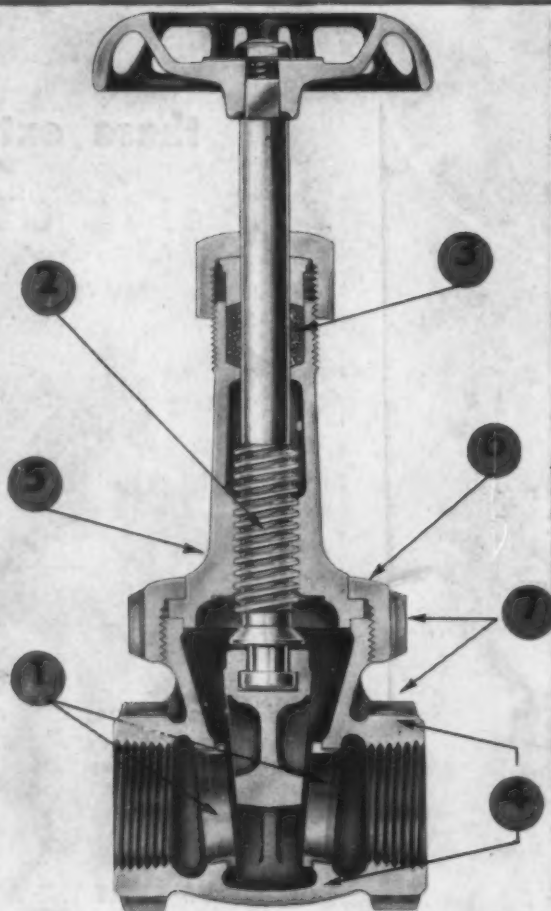
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**5. EXCEPTIONALLY RUGGED BONNET**  
Projection on bottom assures snug fit into neck of body. Large diameter Acme threads, with long bearing, assure improved wear resistance. Machined bevel on underside matches beveled shoulder on spindle for back-seating under pressure and protecting spindle threads when valve is wide open.

**6. HEAVY BONNET RING** Union Bonnet joint withstands exceptionally high hydraulic pressures. Liberal thread engagement assures assembly that can be made tight and kept tight after repeated disassembly.

**7. BODY AND BONNET RING LUGS** Rugged sturdy lugs of novel design on body ends and bonnet ring permit repeated application of conventional wrenches.

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